Gendered Pathways into Co-offending Among a Sample of Adult Burglary and Robbery Offenders

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Research Summary

Co-offending, or the perpetration of an offense by more than one person, is common among the majority of delinquent youth and a substantial portion of adult offenders. Notably, scholars have taken a life course perspective by exploring how co-offending is related to the criminal career, as well as to understand offending among women. According to qualitative studies, women often get involved in crime as co-offenders, and those co-offenders tend to be male – often romantic partners or family members. However, there is limited quantitative research on gender differences in co-offending. Therefore, this study examines whether gender is related to co-offending, whether turning points throughout the life course influence co-offending in adulthood, and whether these pathways into co-offending are gendered. The study utilizes a sample of 484 burglary and robbery offenses committed by 400 offenders incarcerated in Minnesota state prisons. Neither the presence of co-offenders nor the number of co-offenders varied by gender. However, women were more likely than men to act as accomplices and to co-offend with romantic partners or family members. In addition, there was limited evidence that abuse and victimization, substance abuse, mental health problems, and parenthood were related to co-offending, and that these relationships varied by gender.

Introduction

Co-offending, or the perpetration of an offense by more than one person, is common among the majority of delinquent youth and a substantial portion of adult offenders (Reiss & Farrington, 1991; Warr, 1996). Co-offending is an important avenue for understanding crime: violent crime occurs more often in offenses committed by groups than those by solo offenders (McCord & Conway, 2005) and individuals who co-offend commit more crimes than do those who offend alone (Hindelang, 1976; Reiss & Farrington, 1991). Importantly, co-offending appears to be relevant for female crime. According to qualitative studies, women often get involved in crime as co-offenders, and those co-offenders tend to be male – often romantic partners or family members (Becker & McCorkel, 2011; Mullins & Wright, 2003). Women are also more likely to commit serious, violent offenses when they work with men (Alarid et al., 1996; Becker & McCorkel, 2011; Koons-Witt & Schram, 2003). However, the quantitative research on gender differences in co-offending is limited.

Notably, scholars have taken a life course perspective by exploring how co-offending is related to the criminal career (McGloin & Stickle, 2011; Piquero, Farrington, & Blumstein, 2003; Reiss, 1988; Warr, 2002). Still, it is unclear to what extent turning points throughout the life course influence one's likelihood of committing crimes alone versus with co-offenders. Given the gendered nature of co-offending, prior research on gendered pathways to crime – which include abuse and victimization, substance abuse, mental illness, homelessness, and parenthood – may inform our understanding of co-offending (Belknap, 2015; Bloom, Owen, & Covington, 2003; Chesney-Lind & Pasko, 2013). Co-offending may be, in part, a product of these pathways, especially among women.

The current study examines burglary and robbery offenses committed by individuals

incarcerated in Minnesota prisons to address the following research questions: First, does gender predict whether individuals commit crimes alone or in groups? Second, does gender influence the nature of co-offending, such as the size of co-offending groups, the nature of one's role in the offense, or the relationship between co-offenders? Third, are these aspects of co-offending predicted by life-course events such as childhood abuse, adult victimization, addiction, or becoming a parent? Fourth, do these pathways into co-offending vary by gender?

This study contributes to the literature on co-offending in several ways. First, it adds to the small body of research on gender and co-offending. Second, it extends pathways theory by quantitatively testing whether co-offending is related to the components commonly linked to crime among women. Third, while adults are less likely to co-offend than juveniles (Warr, 2002), co-offending is still an important part of their ongoing criminal career; therefore, this study also benefits from a focus on adult offenders, often neglected by the research on co-offending. Finally, using a sample of incarcerated offenders allows for an examination of co-offending that occurs in serious criminal incidents.

Involvement with antisocial peers is an important criminogenic need (Andrews, Bonta, & Wormith, 2006); therefore, it is important to study co-offending groups and the factors that lead individuals to participate in them. The results of the study will inform policy in a number of ways. First, a better understanding of co-offending will inform correctional programming aimed at reducing the influence of antisocial peers, which is an important criminogenic need. Second, given the concerns about the uniqueness of needs for female correctional programming, the study can shed light on issues that shape crime among female offenders, providing knowledge that can be used to create or improve programs for women. Third, the focus on developmental pathways can identify life events that place offenders on a trajectory into criminal involvement; these may

be times when interventions are needed.

Previous Literature on Co-Offending

Research has shown that a large portion of offending is committed in the company of others (Reiss & Farrington, 1991; Warr, 1996). Several general theoretical perspectives have been used to explain co-offending. The first is that co-offending comes about through social selection. As Hirschi (1969) argues, individuals with high criminal propensity choose to spend time with others like them, creating delinquent groups that commit crimes together (see also Haynie, Doogan, & Soller, 2014; Hoeben, Meldrum, Walker, & Young, 2016; Schwartz, Solomon, & Valgardson, 2019; Turanovic & Young, 2016). The second theory is that co-offending stems from the influence of one's peers. Scholars have long noted that individuals learn techniques used to commit crimes from other offenders, transmit deviant values to one another, and are socially rewarded for engaging in crime with their peers (Shaw & McKay, 1942; Sutherland & Cressey, 1974; Warr, 2002). Relatedly, explanations of co-offending often follow rational choice theory; offenders choose to commit crimes with others because there are benefits to doing so that outweigh the costs. For example, working with co-offenders can increase one's illegal earnings and can make offending safer due to the presence of accomplices such as lookouts (Rowan, McGloin, & Nguyen, 2018; Wright & Decker, 1994).

The literature on criminal careers has identified a number of factors related to co-offending. Co-offending tends to vary by age; it peaks in adolescence and declines in adulthood, likely because the influence of peers is strongest during adolescence (Lantz & Ruback, 2017; McCord & Conway, 2005; Reiss, 1988; Warr, 2002; Weerman, 2003). Offenders with little criminal experience often work with co-offenders; as they gain more criminal experience, they tend to move into solo offending (Reiss & Farrington, 1991) and have fewer co-offenders per

offense when they do offend with others (Lantz & Ruback, 2017). Because working with co-offenders can make crime more profitable and less dangerous (Rowan et al., 2018; Wright & Decker, 1994), younger offenders and those with less experience can benefit from working with co-offenders, while older offenders with more criminal experience may still choose to bring in accomplices to further their criminal pursuits (Coleman, 1990; Moffitt, 1993).

In addition, there is evidence that certain turning points may increase or decrease the likelihood of co-offending. For example, Sampson and Laub (1993) found that delinquent males were more likely to desist from crime if they encountered certain turning points: getting married, having children, or finding stable jobs. It is argued that these turning points promote desistance, in part, by reducing time spent with peers, which reduces criminal motivation and criminal opportunity, thereby making co-offending less likely (Warr, 1998). However, Giordano, Cernkovich, and Rudolph (2002) did not find this pattern among women. Rather, they identified different hooks for change – such as experiences with formal organizational settings and family relationships with children or romantic partners – that serve as catalysts for cognitive transformations that allow individuals to truly change.

Gender, Pathways, and Co-Offending

Gendered Pathways into Crime

In response to the recent increase in women entering the criminal justice system, feminist criminologists and gender-responsive scholars argue that criminological theories that explain male crime are insufficient for understanding why women engage in crime. In line with this argument, Belknap and Holsinger (2006) found that different risk factors predict delinquency among girls than among boys. Similarly, several studies have shown that assessments designed to predict crime among men do not perform well for women (Holtfreter, Reisig, & Morash,

2004; Reisig, Holtfreter, & Morash, 2006; Van Voorhis, Wright, Salisbury, & Bauman, 2010).

Notably, pathways theory argues that men and women have different life-course trajectories into crime (Belknap, 2015; Bloom, Owen, & Covington, 2003; Chesney-Lind & Pasko, 2013) and identifies important life events for understanding crime among women. Daly's qualitative examination of court documents (1992) identified five pathways that led women to become involved in crime: (1) *street women* entered street life and engaged in drugs, prostitution, or theft in order to flee abuse and victimization; (2) *drug-connected women* got involved with using or trafficking drugs, often through intimate partners or family members; (3) *harmed and harming women* experienced extreme child abuse and neglect, followed by school problems, hostility, and chronic adult criminality; (4) *battered women* experienced victimization from partners, leading to criminal behavior that would be unlikely outside the relationship; and (5) *"other" women* engaged in financially-motivated crimes for survival or a desire for more money. Studies that attempted to replicate these pathways using quantitative methods found support for Daly's observations (Brennan, Breitenbach, Dieterich, Salisbury, & Van Voorhis, 2012; Salibsury & Van Voorhis, 2009; Simpson, Yahner, & Dugan, 2008).

The literature confirms that many female offenders are placed on a path to crime early in life due to abuse or victimization. Child abuse has been linked to participation in delinquency and adult crime (Bunch, Iratzoqui, & Watts, 2018; Salisbury & Van Voorhis, 2009; Widom, 1989; Widom & White, 1997); similarly, researchers have found that victimization during adulthood can push individuals – especially women – into crime (Marshall & Miller, 2019; Salisbury & Van Voorhis, 2009). Abuse and victimization often lead to mental health issues and substance use (Arnold, 1990; Benedini & Fagan, 2018; Chesney-Lind & Pasko, 2013; Marquart, Brewer, Simon, & Morse, 2001; McClellan, Farabee, & Crouch, 1997), further increasing the

risk of criminal behavior (e.g., Broidy, Payne, & Piquero, 2018). Female offenders are more likely than male offenders to have histories of abuse or victimization, substance use, and mental health issues. For example, McClellan and colleagues (1997) found higher rates of victimization, depression, and drug use among women and among men, and showed that these were stronger predictors of crime for women than for men. Gehring (2018) found that childhood abuse, mental illness, and substance abuse predicted pretrial failure among women only.

In addition to traumatic events such as abuse and victimization, relationship status and parenthood can also serve as turning points towards crime among women. Research on men suggests that marriage and parenthood is believed to change one's life in a way that reduces criminal opportunity (Sampson & Laub, 1993). However, Giordano et al. (2002) argue that this view ignores the complex nature of social relationships, and that many women do not desist after becoming wives or mothers. Indeed, while some women experience change that they attribute to their children or relationships (Giordano et al., 2002), transitions into roles such as wife and mother can sometimes expose women and girls to older, more deviant peers or romantic partners, creating greater likelihood of engaging in drug use and crime (Carbone-Lopez & Miller, 2012; Gaarder & Belknap, 2002).

The Current Study

To explore the possible gendered dimensions of co-offending, this study examines burglary and robbery offenses committed by offenders incarcerated in Minnesota state prisons. Reiss and Farrington (1991, p394) state that "co-offending varies with offense type and is especially important for the offenses of burglary and robbery." Other prior research has concluded that these crime types are notable in their rates of co-offending (Carrington, 2002; Carrington, 2009; Piquero, Farrington, & Blumstein, 2007; van Mastrigt, 2008; van Mastrigt &

Farrington, 2009). Further, burglary and robbery have high rates of co-offending among both males and females (Carrington, 2009), making them ideal for analyzing gendered patterns in co-offending. Importantly, the focus on robbery and burglary offenses also allows for a quantitative examination of relationships between gender and co-offending that were suggested by qualitative studies focusing on these crime types (e.g., Decker, Wright, Redfern, & Smith, 1993; Miller, 1998; Mullins & Wright, 2003; Wright & Decker, 1997).

Several hypotheses regarding gender and co-offending are tested. First, the literature demonstrates that women commit less crime than men, particularly serious, violent crime (Adler, 1975; Gilligan, 1985; Lauritsen, Heimer, & Lynch, 2009; Steffensmeier, 1993). Therefore, it could be expected that women commit fewer solo offenses than men. In addition, research has suggested that women often become involved in crime through their relationships with others (Mullins & Wright, 2000), which can be expected to increase their likelihood of co-offending.

Hypothesis 1: Women are more likely than men to co-offend.

Second, Steffensmeier (1983) explained the gender gap in crime by suggesting that criminal opportunity may vary by gender. In particular, because women are disadvantaged for selection into male networks – including criminal groups – they have less criminal capital and therefore less access to potential co-offenders (see Cloward & Ohlin, 1960; McCarthy & Hagan, 2001; Schwartz & Steffensmeier, 2017). If women are often excluded from established criminal groups and hold relatively low-status positions when they are included (Steffensmeier, 1983), they may be limited in the number of potential associates with whom they can commit crimes (Schwartz & Steffensmeier, 2017). Accordingly, women often have difficulty recruiting criminal associates to participate in illicit pursuits that they identify, possibly resulting in smaller co-offending groups (Schwartz, Conover-Williams, & Clemons, 2015; Steffensmeier, Schwartz, &

Roche, 2013). *Hypothesis 2: Compared to men, women commit offenses with fewer co-offenders.*

Third, serious criminal offenses are typically planned by high-level members of criminal groups (McCuish, Bouchard, & Corrado, 2015; Morselli, 2009), who tend to be men. The inability of women to fully join criminal networks and recruit associates (Schwartz et al., 2015; Steffensmeier et al., 2013) reduces their ability to play high-level roles in crime, instead relegating them to lower-level participation in offenses planned by men. Further, it has been suggested that men recruit female accomplices to increase safety or profitability (Schwartz & Steffensmeier, 2017). For example, women may provoke less suspicion from potential targets or guardians, they can get needed information, or they can attract or distract a potential target (see also McCarthy & Hagan, 1995; Miller, 1998; Mullins & Wright, 2000). *Hypothesis 3: Women are less likely than men to play a major role in an offense that is committed with others.*

While women may be largely excluded from criminal networks, there are situations in which men do choose to co-offend with women. Notably, men are likely to commit crime with women when a romantic or otherwise close relationship exists (Schwartz & Steffensmeier, 2017). The co-offending literature shows that male offenders who work with female co-offenders tend to work with family members such as mothers, wives, or sisters (Reiss & Farrington, 1991). Further, research on female pathways into crime suggests that are often enlisted into crime by others with whom they have close relationships, most often romantic partners or close family members such as parents, siblings, or uncles (Cobbina & Oselin, 2011; Mullins & Wright, 2003; Schwartz & Steffensmeier, 2017). *Hypothesis 4: When co-offending, women are more likely than men to commit crimes with romantic partners or family members.*

In addition to examining gender differences in co-offending, this study also explores

whether life events linked to crime by prior research – such as child abuse, adult victimization, parenthood, substance abuse, mental health problems, and homelessness – influence whether offenders commit crimes alone or with co-offenders. These pathways can increase co-offending by increasing association with deviant peers who may serve as co-offenders (Khade, 2016; Patterson, 1982; Simons & Whitbeck, 1991). These pathways can also influence one's routine activities (Koo, Chitwood, & Sánchez, 2008; Tillyer, 2015); certain activities – such as unstructured leisure activities – may increase the likelihood of co-offending (Felson, 2003), especially when that time is spent with deviant peers (Hoeben et al., 2016; Osgood, Wilson, O'Malley, Bachman, & Johnston, 1996). *Hypothesis 5: Turning points throughout the life course increase the likelihood that individuals co-offend, co-offend with larger groups, play major roles in the offense, and offend with romantic partners and family members.*

Further, the importance of specific life events may vary by gender; Rönkä, Oravala, and Pulkkinen (2003) found that men and women identify different types of events as being important turning points in their lives. Moreover, the pathways literature suggests that the turning points identified in Hypothesis 5 are especially salient for female crime (McClellan et al., 1997; Salisbury & Van Voorhis, 2009; Simons & Whitbeck, 1991). On the other hand, because male and female victimization may be influenced by different risk factors (e.g., Elvey & McNeeley, 2018; Wilcox, Tillyer, & Fisher, 2009), the consequences of child abuse and victimization may differ by gender as well. Consistent with this idea, studies confirm that the effects of child maltreatment on delinquency vary by gender (Watts & Iratzoqui, 2018; Widom & White, 1997). Furthermore, these developmental pathways may influence men and women differently because they can influence association with deviant peers and criminogenic routine activities, which have different influences on offending among men and women (Walters, 2018;

Zimmerman & Messner, 2010). *Hypothesis 6: The effects of turning points on co-offending, size of co-offending groups, role in the offense, and relationship between co-offenders are stronger among females than among males.*

Research Methods

Data and Sample

This study examines a sample of burglary or robbery offenses committed by inmates incarcerated in Minnesota state prisons. First, 400 burglary and robbery offenders (200 males and 200 females) released between January 18, 2014[1] and April 30, 2018 were selected. The sample includes all 200 females released during that time period[2] and a random selection of 200 males released during that time period. Then, the burglary or robbery offenses for which those offenders were incarcerated were identified, resulting in a sample of 484 offenses.

Nearly half (49%) of the offenders in the sample were White, while 30% were Black, 17% were Native American, 2% were Asian or Pacific Islander, and 2% were Hispanic. The sample ranged from 16 to 57 years of age, with an average age of 28 years. A majority of the offenses in the sample (70%) were burglaries. Compared to the general population of offenders incarcerated in Minnesota, this sample contains a higher percentage of Native Americans and is, on average, younger. For example, on January 1, 2018, 9.7% of the Minnesota prison population was Native American, and the average age was approximately 37 years.

This study employs content analysis of pre-sentence investigation (PSI) reports and criminal complaints. PSIs are conducted by field service agents who interview the defendant as well as other individuals who can provide important information, such as police, prosecutors,

[1] This start date was based on the introduction of the newest version of MnDOC's Correctional Operations Management Systems (COMS).
[2] The low number of female offenders released from prison for these two offense types is not unexpected given that Minnesota has one of the lowest female incarceration rates in the United States (e.g., Bronson & Carson, 2019).

mental health and substance abuse treatment providers, family members, associates, and employers. PSIs contain information on the circumstances of the offense, including the defendant's version of the offense, as well as various information about the defendant, including prior record, family and marital history, education, employment status and history, physical health, chemical health, and mental health. A criminal complaint is a written statement of the facts of the case and a description of the evidence against the defendant.

Data collection was conducted using (1) the criminal complaint for the offense that was selected for the study and (2) the study offender's PSI completed for the sentencing of that offense. In some cases when additional information was needed, data collection was also conducted using (3) the study offender's PSIs completed for the sentencing of other offenses and/or (4) the PSI completed for the sentencing of the co-offender(s). All cases were coded by the first author. Data on criminal offenses, including co-offending information, were collected through the criminal complaints and the descriptions of crime events provided in the PSIs. Data on offenders' life histories were also obtained from the PSI and/or from the study offender's other PSIs. Other offender data (e.g., demographic information) were collected from the Minnesota Department of Corrections' (MnDOC) Correctional Operations Management System (COMS). Some offenders' PSI reports were incomplete, resulting in missing data. Missing data were handled using listwise deletion; the sample after listwise deletion consisted of 419 offenses.[3]

Dependent Variables

Several aspects of co-offending are used as dependent variables. The existence, identities, and actions of co-offenders were determined by examining the criminal complaint, the offender's

[3] Results of Little's MCAR test show the data are missing completely at random ($X2 = 228.731$, $p > .05$).

description of the offense contained in the PSI report, and, in some cases, the co-offender's description of the offense contained in his or her PSI report. First, co-offending is a binary measure indicating whether the offender committed the offense with at least one other person. An offense was considered a co-offending incident if the description of the offense provided by either the police (in the criminal complaint) or the defendant (in the PSI report) mentioned the participation of others, even if those others were not convicted or even identified by police. Co-offending occurred in 57% of the offenses (53% of burglaries and 67% of robberies). Descriptive statistics for all variables are presented in Table 1.

The second dependent variable is a continuous variable measuring the number of co-offenders involved in the crime. This information was located in the descriptions of the crime given in the criminal complaint and/or the defendant's version of the offense contained in the PSI. The number of co-offenders ranged from 0 to 6, with an average of 1.01.

For those offenses that involved co-offenders, two other dependent variables were examined. First is an ordinal variable that measures the offender's role in the offense, based on their involvement in the planning and commission of the offense as described in the criminal complaint and/or the defendant's and co-offender's accounts of the offense in the PSI report. The variable includes three categories: 1) the offender was an accomplice to his or her co-offenders, in that he/she acted as a decoy, lookout, or lure while the co-offender(s) carried out a more active or violent role in the offense; 2) the offender had an equal role to his or her co-offenders; and 3) the offender had a major role, in that he/she carried out the most active or violent part of the offense, with his or her co-offenders acting as accomplices. The offender in the study sample had a major role in 30% of offenses, an equal role in 48% of offenses, and was an accomplice in 23% of offenses.

Table 1. Descriptive Statistics

	Full Sample			*Males*			*Females*			*t*
	Mean or %	SD	Range	Mean or %	SD	Range	Mean or %	SD	Range	
Dependent variables										
Co-offenders	0.57	0.50	0-1	0.56	0.50	0-1	0.60	0.49	0-1	-0.90
Number of co-offenders	1.01	1.14	0-6	0.99	1.17	0-6	1.03	1.11	0-5	0.55
Co-offender was romantic partner/family member	0.34	0.47	0-1	0.23	0.42	0-1	0.46	0.50	0-1	-4.30*
Role in the offense	2.07	0.72	1-3	2.25	0.67	1-3	1.89	0.72	1-3	4.31*
Accomplice	22.5%	---	---	13.0%	---	---	32.1%	---	---	---
Equal role	47.6%	---	---	48.6%	---	---	46.7%	---	---	---
Major role	29.8%	---	---	38.4%	---	---	21.2%	---	---	---
Offense-level independent variables										
Robbery offense	0.30	0.50	0-1	0.37	0.48	0-1	0.23	0.42	0-1	3.30*
Offender substance use during offense	0.38	0.49	0-1	0.34	0.47	0-1	0.43	0.50	0-1	-2.01*
Offender-level independent variables										
Offender age at time of offense	28.24	9.31	16-57	28.19	10.10	17-57	28.29	8.37	16-52	-0.13
Female	0.50	0.50	0-1	---	---	---	---	---	---	---
White	0.49	0.50	0-1	0.39	0.49	0-1	0.59	0.49	0-1	-4.51*
Married/cohabitating	0.21	0.41	0-1	0.19	0.40	0-1	0.22	0.42	0-1	-1.31
Parent	0.61	0.49	0-1	0.53	0.50	0-1	0.69	0.46	0-1	-3.30*
Substance abuse history	0.90	0.30	0-1	0.87	0.34	0-1	0.93	0.25	0-1	-2.41*
Mental health history	0.73	0.45	0-1	0.67	0.47	0-1	0.79	0.41	0-1	-2.30*
Abuse or neglect as a child	0.44	0.50	0-1	0.34	0.48	0-1	0.54	0.50	0-1	-4.52*
Abuse or victimization as an adult	0.18	0.38	0-1	0.02	0.13	0-1	0.34	0.47	0-1	-9.68*
Prior convictions (natural log)	0.98	0.87	0-3.33	1.14	0.92	0-3.33	0.81	0.79	0-3.04	4.30*
Age of onset of criminal behavior	16.80	5.47	5-49	15.55	4.59	5-38	18.09	6.00	9-49	-5.06*
Homeless at time of offense	0.16	0.37	0-1	0.11	0.31	0-1	0.21	0.41	0-1	-3.09*
Number of offenses	1.21	0.71	1-8	1.26	0.78	1-8	1.16	0.63	1-8	2.04*

*$p < .05$

The final dependent variable measures whether the offender participated in the crime with a romantic partner or family member. The relationship between the offender in the study sample and each co-offender was captured; the dependent variable was coded as 1 if at least one co-offender was a romantic partner or family member and 0 if none of the co-offenders were romantic partners or family members. This information was typically found in the offender's PSI, but was sometimes available in the criminal complaint or the co-offender's PSI. Offenders committed crimes with romantic partners or family members in 34% of offenses.

Independent Variables

Several life history variables were examined in the present study. First was a binary variable measuring whether the offender witnessed domestic violence or experienced neglect, physical abuse, or sexual abuse during childhood or adolescence. Second was a binary measure indicating whether the offender experienced sexual or domestic violence victimization during adulthood. Third, substance abuse history is measured with a binary indicator of whether the offender had a history of substance use or substance abuse treatment, or a diagnosis related to chemical dependency or addiction. Fourth, mental health history is measured with a binary variable measuring whether the offender had a mental health diagnosis, a history of mental health treatment, or symptoms of a mental illness. Fifth, parenthood is measured as a binary indicator of whether the offender was a parent. Sixth, marital status is a binary variable indicating whether the offender was married or cohabitating. Seventh, homelessness is measured as a binary variable indicating whether the offender was either homeless or had unstable access to housing.

In addition, several other characteristics are included as controls. First, to account for the difference in co-offending among life-course persistent offenders (Moffitt, 1993), the offender's

age at onset of criminal activity is included (measured in years). Second, the offender's criminal history is a continuous measure of the number of times the offender had previously been convicted of a felony, not counting the current offense.[4] Third, race is a binary variable indicating whether the offender is White or non-White.[5] Fourth, gender is a binary variable with a score of 1 indicating that the offender is female. Fifth, the offender's age at the time of the offense is measured in years. Sixth, education is measured as a binary variable indicating whether the offender had at least a high school diploma (or equivalent) at the time of the offense.

Finally, two characteristics of the offense itself are examined. First was a binary variable indicating whether the offense was a burglary (coded as 0) or robbery (coded as 1). Second was a binary variable indicating whether the offender had engaged in substance use or was intoxicated at the time of the offense.

Statistical Analyses

Because the various dependent variables are measured at different levels of measurement (e.g., nominal, ordinal, ratio), several different multivariate analyses are used. First, co-offending status and co-offending with romantic partners or family members are dichotomous variables and are therefore examined using binary logistic regression. Second, poisson regression is used to analyze the number of co-offenders involved in the offense. Third, the models predicting the offender's role in the offense are estimated using ordinal regression. Because the data contains incidents clustered within offenders, which can cause biased results in standard regression

[4] The variable measuring the number of prior convictions was positively skewed; therefore, the natural log of this variable was taken. Because some offenders had no prior convictions, 1 was added to this variable before taking the natural log. Supplemental analyses (available upon request) were conducted in which criminal history was measured as the number of prior convictions in the same category as the current offense(s) (i.e., burglary and/or robbery convictions). The results are substantively similar to those presented below.

[5] A binary variable is used to measure race because of small cell sizes for some racial groups, as well as the need to limit the number of independent variables due to the small sample sizes in the gender-specific analyses (e.g., Penduzzi et al., 1996).

models, these analyses calculate robust standard errors (specifically, the Huber-White sandwich, see Rogers, 1993; Wooldridge, 2002). To examine gender differences in the predictors of co-offending, separate analyses are conducted for male and female offenders. Significant gender differences in these relationships are identified using the equality of coefficients test (Paternoster et al., 1998).

Results

Co-Offending

The results of the binary logistic regression predicting co-offending as opposed to solo offending are displayed in Table 2. There was no significant relationship between gender and co-offending ($b = 0.09$, $p > 0.5$). Additionally, none of the life course events examined were related to co-offending. Two control variables were significantly related to co-offending First, co-offending was about twice as likely during robberies than during burglaries ($b = 0.87$, $p < .01$). Second, co-offending was more likely among younger offenders ($b = -0.07$, $p < .001$); the odds of co-offending decreased by 7% for each year increase in age. Notably, offender age seemed to have a stronger effect among men than among women.

Number of Co-Offenders

Table 3 presents the results of the poisson regression model predicting the number of co-offenders. Gender was not related to the number of co-offenders ($b = 0.08$, $p > .05$). One life course event was significantly related to the number of co-offenders, and this relationship varied by gender. Homelessness was related to fewer co-offenders ($b = -0.34$, $p < 0.05$); further, this relationship was only observed among females. Two control variables were significantly related to the size of co-offending groups. First, there were more co-offenders among robbery offenses than among burglary offenses ($b = 0.41$, $p < .05$). Second, offender age was negatively related to

Table 2. Binary Logistic Regression Models Predicting Co-Offending

	Full Sample		*Male*		*Female*		*M - F*
	b (SE)	OR	b (SE)	OR	b (SE)	OR	z
Constant	1.36 (0.58)*	3.88	1.39 (0.92)	4.00	1.22 (0.87)	3.39	0.37
Offense characteristics							
Robbery offense	0.87 (0.29)**	2.39	0.90 (0.37)*	2.45	1.06 (0.43)*	2.87	-0.28
Offender substance use during offense	-0.12 (0.26)	0.89	-0.54 (0.37)	0.58	0.10 (0.35)	1.10	-1.26
Offender characteristics							
Offender age at time of offense	-0.07 (0.02)***	0.93	-0.13 (0.03)***	0.88	-0.04 (0.03)	0.96	-2.12*
Female	0.09 (0.27)	1.10	---	---	---	---	---
White	0.06 (0.26)	1.06	0.50 (0.38)	1.65	-0.14 (0.37)	0.87	1.21
Married/cohabitating	0.05 (0.30)	1.05	0.26 (0.43)	1.29	-0.05 (0.42)	0.96	0.52
Parent	0.14 (0.26)	1.14	0.50 (0.37)	1.65	-0.24 (0.41)	0.79	1.34
Substance abuse history	0.06 (0.40)	1.06	0.03 (0.51)	1.03	0.37 (0.65)	1.44	-0.41
Mental health history	-0.08 (0.30)	0.93	-0.03 (0.39)	0.97	-0.31 (0.45)	0.73	0.47
Abuse or neglect as a child	0.24 (0.26)	1.27	0.48 (0.38)	1.62	0.08 (0.37)	1.08	0.75
Abuse or victimization as an adult	-0.14 (0.36)	0.87	-0.06 (0.84)	0.94	-0.16 (0.39)	0.85	0.11
Prior convictions	-0.11 (0.18)	0.89	0.22 (0.26)	1.25	-0.30 (0.26)	0.74	1.41
Age of onset of criminal behavior	0.04 (0.03)	1.04	0.10 (0.05)*	1.10	0.03 (0.03)	1.03	1.20
Homeless at time of offense	-0.53 (0.32)	0.59	-0.67 (0.53)	0.51	-0.60 (0.41)	0.55	-0.10
Model Information							
N	417		211		206		
Log pseudolikelihood	-256.987		-121.619		-129.985		
Model X^2	42.56***		31.84**		16.56		
Pseudo R^2	0.09		0.15		0.07		

***p < .001, **p < .01, *p< .05

Table 3. Negative Binomial Models Predicting Number of Co-Offenders

	Full Sample		*Male*		*Female*		*M - F*
	b (SE)	IRR	b (SE)	IRR	b (SE)	IRR	z
Constant	0.83 (0.29)**	2.29	0.97 (0.46)*	2.64	0.68 (0.39)	1.98	0.48
Offense characteristics							
Robbery offense	0.41 (0.13)**	1.51	0.41 (0.17)*	1.51	0.46 (0.18)**	1.58	-0.20
Offender substance use during offense	-0.04 (0.13)	0.96	-0.08 (0.18)	0.92	-0.08 (0.17)	0.92	0.00
Offender characteristics							
Offender age at time of offense	-0.04 (0.01)***	0.96	-0.07 (0.02)***	0.94	-0.03 (0.01)	0.97	-1.79
Female	0.08 (0.13)	1.08	---	---	---	---	---
White	-0.10 (0.14)	0.90	0.19 (0.19)	1.21	-0.31 (0.18)	0.73	1.91
Married/cohabitating	0.08 (0.16)	1.09	0.04 (0.23)	1.05	0.08 (0.20)	1.08	-0.13
Parent	-0.01 (0.13)	0.99	0.05 (0.18)	1.05	0.04 (0.19)	1.04	0.04
Substance abuse history	0.04 (0.19)	1.04	0.03 (0.23)	1.03	0.10 (0.27)	1.10	-0.20
Mental health history	0.14 (0.15)	1.15	0.08 (0.19)	1.09	0.13 (0.23)	1.14	-0.17
Abuse or neglect as a child	0.03 (0.13)	1.03	-0.08 (0.17)	0.92	0.20 (0.20)	.22	-1.07
Abuse or victimization as an adult	-0.13 (0.16)	0.88	0.004 (0.26)	1.00	-0.15 (0.17)	0.86	0.50
Prior convictions	-0.10 (0.10)	0.91	0.08 (0.13)	1.08	-0.27 (0.14)	0.77	1.83
Age of onset of criminal behavior	0.01 (0.01)	1.01	0.03 (0.28)	1.03	0.002 (0.03)	1.00	0.10
Homeless at time of offense	-0.34 (0.16)*	0.71	-0.32 (0.28)	0.73	-0.39 (0.20)*	0.67	0.20
Model Information							
N	417		211		206		
Log pseudolikelihood	-541.433		-277.454		-257.004		
Model X^2	76.30***		48.00***		46.57***		

***p < .001, **p < .01, *p< .05

the size of co-offending groups (b = -0.04, p < .001), especially among males (b = -0.07, p < 0.001).

Role in the Offense

The results for the ordinal regression predicting role in the offense are presented in Table 4. Gender was related to the offender's role in the offense (b = -0.83, p < .05); female offenders played less serious roles in their offenses than did the male offenders in the sample. Life course events were related to the offender's role in the crime; further, the influence of certain events seemed to vary by gender. Offenders with histories of substance abuse (b = 1.10, p < .05) had more serious roles in the offense. Males with histories of mental health problems played less serious roles in the offense (b = -0.84, p < .05). Males who experienced adult abuse or victimization had less serious roles in the offense (b = -1.84, p = 0.010). Among females, age of onset of criminal behavior was related to less serious roles in the offense (b = -0.12, p < .01). This relationship varied significantly by gender (z = 2.64, p < .05).

Co-Offending with Romantic Partners or Family Members

The results of the logistic regression models predicting participation in crime with romantic partners or family members are presented in Table 5. First, women were approximately three times more likely than men to co-offend with romantic partners or family members (b = 1.19, p < .01). Second, married offenders were nearly seven times more likely to offend with romantic partners or family members than those who were not married (b = 1.93, p < .001). Finally, female offenders with histories of substance abuse were more about thirteen times more likely to co-offend with romantic partners or family members than were women without such histories (b = 2.51, p < 0.001). The relationship between substance abuse and co-offending with romantic partners or family members was not observed among men.

Table 4. Ordinal Logistic Regression Models Predicting Role in the Offense

	Full Sample		*Male*		*Female*		*M - F*
	b (SE)	OR	b (SE)	OR	b (SE)	OR	z
Offense characteristics							
Robbery offense	0.40 (0.35)	1.49	1.03 (0.53)	2.80	-0.34 (0.54)	0.71	1.81
Offender substance use during offense	-0.48 (0.28)	0.62	-0.40 (0.41)	0.67	-0.78 (0.42)	0.46	0.66
Offender characteristics							
Offender age at time of offense	0.03 (0.03)	1.03	-0.05 (0.05)	0.95	0.06 (0.04)	1.07	-1.72
Female	-0.83 (0.34)*	0.44	---	---	---	---	---
White	0.16 (0.30)	1.17	0.59 (0.47)	1.80	0.10 (0.40)	1.10	0.79
Married/cohabitating	0.06 (0.31)	1.06	0.22 (0.52)	1.25	-0.19 (0.43)	0.82	0.61
Parent	-0.17 (0.31)	0.85	0.26 (0.50)	1.30	-0.27 (0.46)	0.77	0.78
Substance abuse history	1.10 (0.43)*	3.00	1.04 (0.57)	2.84	1.30 (0.69)	3.69	-0.29
Mental health history	-0.78 (0.32)	0.46	-0.84 (0.42)*	0.43	-0.57 (0.55)	0.57	-0.39
Abuse or neglect as a child	-0.19 (0.30)	0.83	-0.33 (0.46)	0.72	0.03 (0.50)	1.03	-0.53
Abuse or victimization as an adult	-0.54 (0.36)	0.58	-1.84 (0.73)*	0.16	-0.48 (0.42)	0.62	-1.62
Prior convictions	-0.06 (0.23)	0.94	0.11 (0.37)	1.12	0.04 (0.35)	1.04	0.14
Age of onset of criminal behavior	-0.05 (0.03)	0.95	0.07 (0.06)	1.08	-0.12 (0.04)**	0.89	2.64*
Homeless at time of offense	0.03 (0.36)	1.03	-0.58 (0.53)	0.56	0.50 (0.59)	1.65	-1.36
Model Information							
$Intercept_1$	-1.81 (0.61)		-1.54 (1.00)		-1.22 (1.02)		-0.22
$Intercept_2$	0.72 (0.61)		1.28 (0.97)		1.32 (1.00)		-0.03
N	241		121		120		
Log pseudolikelihood	-230.141		-106.755		-114.484		
Model X^2	39.30***		28.39**		14.03		
Pseudo R^2	0.07		0.09		0.07		

***p < .001, **p < .01, *p< .05

Table 5. Binary Logistic Regression Models Predicting Co-Offending with Romantic Partners or Family Members

	Full Sample		*Male*		*Female*		*M - F*
	b (SE)	OR	b (SE)	OR	b (SE)	OR	z
Constant	-2.24 (0.86)**	0.11	-2.12 (1.24)	0.12	-1.99 (1.41)	0.14	-.07
Offense characteristics							
Robbery offense	0.51 (0.38)	1.66	0.96 (0.64)	2.62	0.40 (0.49)	1.49	0.70
Offender substance use during offense	0.06 (0.34)	1.06	-0.02 (0.55)	0.98	0.22 (0.49)	1.25	-0.33
Offender characteristics							
Offender age at time of offense	-0.05 (0.04)	0.96	-0.01 (0.05)	0.99	-0.07 (0.05)	0.93	0.85
Female	1.19 (0.40)**	3.27	---	---	---	---	---
White	-0.47 (0.37)	0.62	0.09 (0.61)	1.10	-0.86 (0.50)	0.42	1.20
Married/cohabitating	1.93 (0.41)***	6.86	1.71 (0.57)**	5.55	2.24 (0.63)***	9.37	-0.62
Parent	-0.03 (0.38)	0.97	-0.01 (0.63)	0.99	0.14 (0.55)	1.15	-0.18
Substance abuse history	1.16 (0.64)	3.18	0.54 (0.69)	1.72	2.51 (1.14)*	12.30	-1.48
Mental health history	-0.22 (0.41)	0.81	-0.89 (0.58)	0.41	0.13 (0.66)	1.14	-0.79
Abuse or neglect as a child	-0.23 (0.36)	0.79	-0.67 (0.54)	0.51	-0.22 (0.51)	0.80	-0.61
Abuse or victimization as an adult	0.38 (0.50)	1.47	2.62 (1.59)	13.71	0.30 (0.57)	1.35	1.37
Prior convictions	-0.09 (0.29)	0.92	0.20 (0.41)	1.22	-0.47 (0.44)	0.63	1.11
Age of onset of criminal behavior	0.05 (0.04)	1.05	0.02 (0.07)	1.02	0.08 (0.06)	1.08	-0.65
Homeless at time of offense	-0.14 (0.50)	0.87	0.28 (0.97)	1.33	-0.24 (0.56)	0.79	0.46
Model Information							
N	241		122		119		
Log pseudolikelihood	-126.652		-54.782		-65.15		
Model X^2	45.12***		20.90		25.37*		
Pseudo R^2	0.19		0.17		0.21		

***p < .001, **p < .01, *p< .05

Supplemental Analyses

Because the high percentage of Native Americans in the sample allows for a unique examination of this population, supplemental analyses (available on request) were conducted in which race was measured as Native American (1) or not Native American (0). There were no significant relationships between Native American ethnicity and working with co-offenders ($b = -0.17$, $p = 0.57$), the number of co-offenders ($b = 0.15$, $p = 0.38$), or the role in the offense ($b = 0.26$, $p = 0.45$). However, when Native American offenders did work with co-offenders, they were approximately 2.6 times more likely to work with romantic partners or other family members than were non-Native Americans ($b = 0.98$, $p = 0.02$). The gender-specific analyses did not reveal any difference between the effect of Native American ethnicity among males and females.

Discussion

This study examined whether gender shapes whether and how individuals are involved in co-offending relationships. The results showed that males and females were similarly likely to commit burglaries and robberies with co-offenders and co-offended in these offenses with similar numbers of people, contrary to the predictions in Hypotheses 1 and 2. The null results regarding gender and co-offending may be due to the focus on incarcerated offenders. Consistent with the chivalry hypothesis (Kruttschnitt, 1981; Visher, 1983), women who act as co-offenders may be less likely to be arrested, charged, and incarcerated. Therefore, the extent to which co-offenses are detected by the criminal justice system may vary by gender, which may mean that women's greater participation in co-offending may not have been measured.

Still, gender was somewhat related to the nature of co-offending; consistent with Hypotheses 3, women were less likely than men to have an equal or major role in a burglary or

robbery offense, more often working as accomplices. This is in line with research on the gender gap (Adler, 1975; Gilligan, 1985; Lauritsen et al., 2009; Steffensmeier, 1993), which suggests that women are less involved in serious crime than men. It is also consistent with the argument that women are often relegated to lower-level participation in criminal networks and crime events (Miller, 1998; Mullins & Wright, 2003; Schwartz & Steffensmeier, 2017; Steffensmeier, 1983). Importantly, since women who co-offend are more likely to act as accomplices rather than planning and carrying out their own offenses, it is likely that interventions targeting peer influences may be especially successful at reducing offending among women.

In addition, consistent with Hypothesis 4, women who committed burglaries and robberies were more likely to co-offend with romantic partners or family members. As noted by previous research (Schwartz & Steffensmeier, 2017; Steffensmeier, 1983), men have more access to social organizations, including criminal networks, giving them a larger pool of potential co-offenders. Therefore, they are more likely than women to engage in crime with non-relatives, such as friends or acquaintances, neighbors, and other members of criminal groups. In contrast, women are often excluded from such networks, limiting their pool of potential co-offenders to those with whom they already have close relationships. It is notable that individuals who were married or cohabitating with romantic partners were overwhelmingly more likely to co-offend with romantic partners or family members than those with other relationship statuses. This suggests that either the strength or nature of the bond or the continued interaction and communication may be important in shaping co-offending between partners, possibly through a transmission of deviant values from one partner to another (e.g., Giordano et al. (2002).

The study also tested whether pathways theory – which argues that women are pushed into crime by certain life-course trajectories – is an appropriate framework for understanding co-

offending. The turning points identified by pathways theory (e.g., Belknap, 2015; Bloom et al., 2003; Chesney-Lind & Pasko, 2013; Daly, 1992; Salisbury & Van Voorhis, 2009) were largely unrelated to co-offending in burglaries and robberies; a notable exception was that homelessness reduced the likelihood of co-offending, possibly due to instability that makes one less accessible to peers. This may be due to the focus on adult offenders in this study; earlier turning points may play a greater role in shaping one's criminal career. In addition, these life events may be more important in influencing co-offending that occurs during adolescence. Future research should examine whether these turning points predict co-offending in other types of crimes, especially among women. Still, Hypothesis 5 was partially supported; some turning points were related to the *nature* of co-offending. For example, homeless individuals worked with fewer co-offenders, and those with histories of substance abuse played more serious roles in their co-offense. This supports the notion that life circumstances can lead to criminal behavior by influencing peer associations, intimate relationships, and lifestyles or routine activities (e.g., Daly, 1992; Giordano et al., 2002; Koo et al., 2008; Sampson & Laub, 1993; Tillyer, 2005).

Further, consistent with research on pathways theory (Gehring, 2018; McClellan et al., 1997; Salisbury & Van Voorhis, 2009; Simons & Whitbeck, 1991; Watts & Iratzoqui, 2018; Widom & White, 1997), some turning points had different relationships with the nature of co-offending depending upon gender, providing partial support for Hypothesis 6. This is consistent with a great deal of work on the gendered nature of risk factors for outcomes such as crime (Belknap & Holsinger, 2006; Holtfreter et al., 2004; Reisig et al., 2006; Van Voorhis et al., 2010; Walters, 2018; Zimmerman & Messner, 2010) and victimization (Elvey & McNeeley, 2018; Wilcox et al., 2009). However, although there was evidence that the predictors of co-offending are somewhat gendered, the results were not entirely consistent with pathways theory. As

expected, some pathways that previous research suggest are important for predicting female crime – such as homelessness, early criminal behavior, marital status, and substance abuse – were related to the nature of women's involvement in co-offending. However, other factors that have been linked to crime among women – such as victimization and mental health history – appeared to be more strongly related to co-offending among males. Future research is needed to understand the different influences of these life events on co-offending among men and women.

Limitations

Like all research, this study has a number of limitations that must be acknowledged. First, because the study examined only burglary and robbery offenses, the results may not be generalizable to individuals who commit other types of offenses such as drug crimes, violent crimes, or other property crimes such as theft or fraud. Second, the sample is made up of individual offenses committed by a group of offenders; therefore, the study does not examine co-offending across entire criminal career. This is problematic because offenders tend to commit both solo offenses and group offenses (e.g., McGloin & Stickle, 2011); therefore, those who committed their crimes alone may have co-offended in the past, or vice versa. Third, because the study relies on official data, the dependent variables may not accurately measure the aspects of co-offending that are studied here. The existence of co-offenders, their behavior during the offense, and/or their identities (and therefore their relationship to co-offenders) might not have been known to police or disclosed by the defendant. This may be especially true among burglary offenses, as the victim may not have been present and there may not have been witnesses to specify the number of offenders who were involved.

Fourth, there is a great deal of variety in the PSI reports; some reports contain rich information based on exceptionally thorough investigations while others provide much less

detail. This issue is somewhat mitigated by using multiple data sources when available (i.e., the PSI for the current offense, the PSI for other offenses, and the co-offenders' PSIs). Still, this may have impacted the measurement of the variables used in this study. Further, this inconsistency was too great to include certain information in the study; for example, although the PSIs should contain sections on employment, peers, and leisure activities, that information was typically either missing or lacking in detail; therefore, variables such as socioeconomic status, anti-social peers, and leisure activities could not be included in the study. Finally, while turning points such as marriage influences later behavior, it is important to note that selection into these events may be influenced by personal characteristics such as impulsivity that may also influence co-offending. Unfortunately, it is not possible to completely rule out this selection bias, and the results must therefore be viewed with caution.

Conclusion

Despite these limitations, the results of the study provide important implications for policy and practice. First, treatment programs for women must address issues such as abuse, victimization, substance abuse, mental health problems, and homelessness (see Wattanaporn & Holtfreter, 2014). Consistent with previous literature, the women offenders in this sample were more likely than the men to have these histories (see Table 1). Importantly, some of these pathways were also related to the ways in which women were involved in co-offending. Therefore, addressing these issues may influence how women associate with others, potentially reducing the criminogenic effect of anti-social peers with whom they have close relationships. In addition, these issues appeared to also be related to co-offending among men, which suggests that programs targeting male offenders should also consider the influence of these negative turning points and how they influence men.

Second, the results suggest that co-offending was more likely when committing robberies than burglaries (i.e., co-offending appeared to be more prevalent in violent crimes); therefore, reducing co-offending could be a useful way to reduce violent crime. Considering the role that association with anti-social peers plays in co-offending, correctional programs should aim to reduce this criminogenic need. Programs designed to reduce association with anti-social peers should address how offenders' life histories influence their selection of peers, their relationships with peers, and their interactions with one another, and how these aspects of their relationships can influence offending. In addition, younger offenders should be prioritized for such treatment, as age was inversely related to co-offending (see also Lantz & Ruback, 2017; McCord & Conway, 2005; Reiss, 1988; Warr, 2002; Weerman, 2003).

While this study provided new insights into the relationship between gender and co-offending, there is still much that remains to be learned. First, the study should be replicated using a larger variety of offense types in order to verify the relationships found here. Second, future studies should incorporate neighborhood context, as the environment may influence the recruitment of co-offenders (Schaefer, Rodriguez, & Decker, 2014) and has been shown to have gendered effects on criminal behavior (Zimmerman & Messner, 2010). Finally, while research has shown that co-offending is related to later offending (Carrington, 2009; Conway & McCord, 2002; Warr, 2002), more research is needed due to mixed results. Given the gendered nature of co-offending found in the current study, future research should explore whether the relationship between co-offending and recidivism varies by gender.

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