



## Self-control, differential association, and gang membership: A theoretical and empirical extension of the literature

Jason Kissner <sup>a,\*</sup>, David C. Pyrooz <sup>b</sup>

<sup>a</sup> Department of Criminology, California State University, Fresno, 2576 East San Ramon MS/ST 104, Fresno, CA 93740, United States

<sup>b</sup> School of Criminology and Criminal Justice, Arizona State University, Phoenix, AZ 85069, United States

### ABSTRACT

Using data gathered from a sample of two hundred jail inmates housed in a large California city, this research extends the still nascent literature on the self-control/gang membership association. The article begins by first articulating more comprehensively than earlier research Gottfredson and Hirschi's theoretical justification for expecting a self-control/gang membership link. Next, an examination is undertaken of the relative independent influences on gang membership of self-control and a series of measures, derived from differential association theory, that mainly tap familial gang involvement. On the whole, logistic regression models suggested that self-control exerted an effect on gang membership that was almost entirely independent of, but also modest in comparison to, familial gang involvement effects, although the results also indicated the insignificance of self-control upon controlling for a series of differential association measures. Finally, theoretical implications of the findings and suggestions for future research are offered.

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### Introduction

Gang membership presents a problem of considerable magnitude. The most recent national data suggested that there were approximately 760,000 active gang members in the United States (Egley & Ritz, 2006)—a figure roughly equivalent to the population of San Francisco. Cause for concern regarding this figure is increased when one recognizes that several studies had indicated that gang members were responsible for a disproportionate share of criminal activity (e.g., Esbensen & Huizinga, 1993; Gordon et al., 2004; Thornberry, Krohn, Lizotte, Smith, & Tobin, 2003).

Given that gang membership's facilitation of criminal behavior is well established (see Krohn & Thornberry, 2008, for a review), it is unsurprising that several studies had examined the degree to which various individual risk factors predict gang membership (see Howell & Egley, 2005 for a review). Given these studies, since self-control's association with criminal behavior is also widely documented (see, e.g., Pratt & Cullen, 2000), it is somewhat surprising that to date only a handful of studies (Childs, 2005; Esbensen & Weerman, 2006; Esbensen, Winfree, He, & Taylor, 2001; Hope, 2003; Hope & Damphousse, 2002; Lynskey, Winfree, Esbensen, & Clason, 2000) have explicitly focused on the self-control/gang membership association. In this article, an attempt is made to extend the rather sparse literature regarding self-control's (Gottfredson & Hirschi, 1990) association with gang membership. In particular, this study focused on extending the literature by exploring the relative independent

influences of self-control and differential association measures on gang membership in a cross-sectional context. Related theoretical goals also informed the study.

The opening section contends that a more comprehensive presentation than has so far been offered of Gottfredson and Hirschi's theoretical justification for expecting a self-control/gang membership association sheds additional light on what is at stake from an explanatory standpoint with respect to the gang membership phenomenon no matter the degree to which their perspective is valid. In addition, the application of differential association theory to the explanation of gang membership is developed in a fashion that is in part intended to underscore the notion that differential association theory can, unlike self-control theory, accommodate the possibility that at least some of the "facilitation effect" associated with gang membership can be explained in terms of cooperative behavior. Thus, to the extent that differential association measures prove to significantly predict gang membership net of self-control, there will be that much more reason to investigate their potential more closely.

### Gottfredson and Hirschi's theoretical justification for the application of the self-control construct to the explanation of gang membership

Hirschi and Gottfredson (1994) defined self-control "as the tendency to avoid acts whose long-term costs exceed their momentary advantages" (p. 3; see also Hirschi, 2004, which offered a broader definition of self-control that took into account variation in the short-term costs constraining actors). Given this construal of self-control, the application of the construct to the explanation of gang membership

\* Corresponding author. Tel.: +1 559 278 2369; fax: +1 559 278 7265.  
E-mail address: mkissner@csufresno.edu (J. Kissner).

might be viewed as straightforward. For example, one might argue that gang membership is simply an act that presents long-term costs that exceed the momentary advantage of joining a gang. A closer examination of Gottfredson and Hirschi's writings, however, discloses subtleties with potentially significant implications.

Surprisingly, Hope and Damphousse (2002) and Lynskey et al. (2000)—the two previous studies that devoted sustained discussion to the question of the theoretical underpinnings of the self-control/gang membership link—each overlook what may well have been Gottfredson and Hirschi's (1990) most thought-provoking (and controversial) statements on the matter. Hope and Damphousse did paraphrase Gottfredson and Hirschi's (1990) statement that “groups imply immunity from sanction; they diffuse and confuse responsibility for the act, and they shelter the perpetrator from immediate identification and from long term risk of retribution” (p. 209). They overlooked, however, at least two statements critical to Gottfredson and Hirschi's theoretical specification of the self-control gang membership link. For example, Gottfredson and Hirschi (1990) remarked that:

[p]eople who lack self-control tend to dislike settings that require discipline, supervision, or other constraints on their behavior; such settings include school, work, and, for that matter, the home. These people tend to gravitate toward “the street”, or, at least in adolescence, to the same-sex peer group. (p. 157)

Also, consider their 1990 statement that:

[p]ut another way, adventuresome and reckless children who have difficulty making and keeping friends tend to end up in the company of one another, creating groups of individuals who tend to lack self-control. The individuals in such groups will therefore tend to be delinquent, as will the group itself. (p. 158)

Thus, Gottfredson and Hirschi (1990) held that gangs are loose confederations of individuals brought together by manifestations of their poor self-control—such as delinquency, self-centeredness, dislike of structure, weak bonding with conventional others, and, importantly for present purposes, “untrustworth[iness]” (p. 157)—together with the ubiquitous opportunities for such association produced by factors such as proximity to one another. In a related vein, Gottfredson and Hirschi (1990) asserted that because “...individuals with low self-control do not tend to make good friends” (p. 157), the delinquent peer group (that is, “gang” according to Gottfredson and Hirschi, 1990) “is characterized by weak rather than strong friendship ties, and it has no organizational duties or organized purpose” (p. 159).

This article concentrates on Gottfredson and Hirschi's contention that gangs are constellations of self-interested, untrustworthy, poorly self-controlled individuals who are not “tightly knit” with one another and hence cannot be expected to exhibit strong friendship ties. On the whole, this contention would appear to be inconsistent with the notion that principles of differential association are relevant to the prediction and explanation of gang membership. For reasons specified below, this may point to a substantial theoretical and empirical shortcoming of Gottfredson and Hirschi's account of gang membership.

### Theoretical and empirical implications of Gottfredson and Hirschi's account of gang membership

Battin-Pearson, Thornberry, Hawkins, and Krohn (1998) found that Seattle youths who self-reported gang membership also reported general offense index rates nearly twice as high as those who merely reported having two or more delinquent best friends. This finding raises questions regarding Gottfredson and Hirschi's conception of gangs and gang membership. Given that a great deal of youth

offending involves co-offending, (Reiss, 1988; Warr, 2002), it seems reasonable to suppose that that there was a good deal of co-offending among those in Battin-Pearson et al.'s study who reported having two or more delinquent best friends but did not report gang membership. In turn, this might suggest that much of the offending within this category of individuals was attributable to the notion that “[g]roups...act as a ‘mask and shield’” (Gottfredson & Hirschi, 1990, p. 209) in that they provided enhanced opportunity for the commission of delinquent acts. One might ask, however, whether the large difference in offending between respondents who self-reported gang membership and respondents who merely reported having two or more delinquent best friends can be explained solely in terms of gang membership supplying better masks and shields, as Gottfredson and Hirschi argued. That is, it could be that qualitative differences (see, e.g., Vigil's, 1988 discussion of group identity) as between gang membership and delinquent peer association are relevant to the explanation of the disparity.

Furthermore in connection with facilitation and opportunity and contrary to, for example, Gottfredson and Hirschi (1990) and Hirschi and Gottfredson (2003), it is by no means a settled issue that opportunity as it applies to the commission of specific offenses in group settings is always reducible to atomized combinations of self-interested, egotistical actors each of whom employs nothing other than instrumental rationality (see, e.g., McCarthy, Hagan, & Cohen, 1998). That is, working from a game-theoretical perspective, McCarthy et al. remarked that an individual's criminal decision-making in group contexts frequently involves recognition of the interdependence of decisions. Thus, McCarthy et al. (1998) noted that “...people recognize that outcomes are affected by their choices as well as those of others” (p. 158), which in turn encourages the employment of “collective rationality” with the result that efficient outcomes (even from an individual point of view) in group contexts are best secured by the cooperative exchange of criminal capital. Criminal capital, in turn, may be a function of trust as well as additional social-psychological and structural factors.

In light of these considerations, it is important to emphasize Gottfredson and Hirschi's (1990) statement that those with low self-control “...are unreliable, untrustworthy, selfish, and thoughtless” (p. 157). If this statement is true, then the crime-facilitative effect of gang membership raises serious problems for Gottfredson and Hirschi's definition of “gang” (and, by implication, for their account of gang membership) to the degree that facilitation is a function of trust, collective rationality, and cooperative motivations (such as the motivation to commit those types of “gang-motivated” offenses [Rosenfeld, Bray, & Egley, 1999] that operate in part to reproduce group integrity over time). Moreover, with direct reference to opportunity and in keeping with the foregoing, it may be that gang membership affords more than situational “masks” and “shields”; it could be that gang membership is associated with enhanced opportunity over time by virtue of its facilitation of the cooperative exchange of criminal capital.<sup>1</sup>

The preceding considerations provide some reason for supposing that it is desirable to supplement Gottfredson and Hirschi's explanation of gang membership in terms of low self-control. Such a supplementation should have the theoretical power to accommodate the possibility that at least a portion of gang membership's facilitation effect is attributable to the very kinds of cooperative interactions low self-control theory is, by design, incapable of accounting for.

### Differential association and gang membership

If cooperation, collective rationality, and trust can help explain the well-documented facilitation effect associated with gang membership, it is desirable to draw support from a theory capable of explaining how gangs can be constituted at least in part by members willing to conduct themselves in accordance with these principles. Akers' (1973, 1998) social learning theory may be of assistance in this regard.

As specified, for example, by Akers (1998), social learning theory augmented Sutherland's (1939) theory of differential association by integrating it with the primary learning mechanisms of differential reinforcement, imitation, and stimulus discrimination/generalization. Of particular importance for present purposes is Akers' (1998) notion that:

[t]hese learning mechanisms operate in a process of *differential association*—direct and indirect, verbal and nonverbal communication, interaction, and identification with others. The relative frequency, intensity, duration, and priority of associations affect the relative amount, frequency, and probability of reinforcement of conforming or deviant behavior and exposure of individuals to deviant or conforming norms and behavioral models...[t]he principal learning is through differential association with those persons and groups (primary, secondary, reference, and symbolic) that comprise or control the individual's major sources of reinforcement... (p. 52)

Since Akers clearly provides that differential association processes are the arena in which all primary learning mechanisms operate, it would seem to be the case that measures of differential association are, in at least one respect, ideal for the purpose of assessing social learning theory as a whole, since they should incorporate the full range of social learning mechanisms.

With respect to differential association and gang membership, Winfree, Bäckström, and Mays (1994) stated that “[t]he concept of differential association—typically operationalized as the proportion of one's best friends that engages in some illegal act...has a natural linkage to gang research” (p. 150). The authors continued by noting that gangs do not typically promote friendships exterior to the gang.

Thus, it might be supposed, for example, that differential association with gang members exposes individuals to an excess of “gang favorable” definitions (but see Winfree, Bäckström, et al., 1994; Winfree, Mays, & Bäckström, 1994, who find that this may not be the case). It is also possible that differential association with gang members offers rewards in the form of satisfaction of noncriminal desires such as the desire for companionship (e.g., peers or family) (Dishion, Nelson, & Yasui, 2005; Vigil, 1988) as well as reinforcement of norms subscribed to even prior to association with gang members. Thus, it may be the case that differential association with gang members offers the promise of reinforcement of criminal tendencies. Finally, it may be the case that in certain contexts differential association with gang members can provide discriminative stimuli encouraging gang membership, perhaps in order to secure protection from rival gangs (Sanchez-Jankowski, 1991).

More particularly and in line with research mentioned earlier, differential association with gang members might precipitate gang membership for the reason that it may be the case that by and large the trust one places in others is a function of the frequency, priority, intensity, and duration of one's association with them. If that is so, differential association with gang members might be associated with gang membership due to what may be a fairly widespread tendency to, all else equal, join groups the members of which are trusted. As Williams (2001) noted in a related vein, “...people usually hold positive perceptions of fellow group members' trustworthiness and exhibit cooperative behavior toward them” (p. 377).

If the above reasoning is valid, one would fully expect, on the basis of the considerations advanced in the preceding section, that gangs recruit their members from pools that are not exclusively populated by those with low self-control.

#### Previous research pertaining to self-control, differential association, and gang membership

Although Gottfredson and Hirschi's general theory of crime has received an enormous amount of empirical and theoretical attention,

to date there are only a handful of studies that examined its application to the prediction of gang membership. Lynskey et al. (2000) utilized multi-site, cross-sectional data collected as part of the Gang Resistance Education and Training (G.R.E.A.T.) program (Esbensen & Osgood, 1999). Their study included 5,935 eighth-grade public school students representing forty-two schools, 315 classrooms, and a self-control measure that incorporated “impulsivity” and “risk-seeking” items drawn from the Grasmick, Tittle, Bursik, and Arneklev (1993) scale as well as a proxy indicator of “physicality.” They found that self-control significantly predicted a self-report measure of “gang centrality,” an ordinal measure with scores ranging from 0 (not in the gang) to 5 (the very center of the gang).

Hope and Damphousse (2002) reasoned that given selection (Thornberry, Krohn, Lizotte, & Chard-Wierschem, 1993) and the stability of self-control (on this issue, see, e.g., Burt, Simons, & Simons, 2006; Hay & Forrest, 2006; Mitchell & MacKenzie, 2006; Turner & Piquero, 2002; Winfree, Taylor, He, & Esbensen, 2006), self-control should predict self-reported measures of both former and current gang membership in addition to a measure of gang membership that combined the preceding two categories. Their study included data from 1,139 junior high and high school students in Fayetteville, Arkansas and a twelve-item measure of self-control inspired by the self-control elements specified by Gottfredson and Hirschi (1990). They found that self-control significantly predicted each of their gang membership outcome measures. Hope (2003) also analyzed the Fayetteville data and found that the twelve-item attitudinal self-control measure used in Hope and Damphousse (2002) exerted a significant effect on current gang membership. In addition, Hope (2003) found that a behavioral measure of self-control exerted a significant effect on current gang membership.

Other research has also found links between self-control and gang membership. Esbensen and Weerman (2006) found, once again using the G.R.E.A.T. data, that measures of impulsivity and risk-seeking distinguished those currently in a gang involved in at least one of a series of illegal activities from those not in a gang. Finally, Childs' (2005) findings implied that if self-control does have an effect on current gang membership, the effect is small.

In regard to differential association and gang membership, a number of studies had found general support for a differential association/gang membership linkage. Brownfield (2003) purported to test the effect of differential association on gang membership and found a significant effect net of controls for peer delinquency and control theory variables. Unfortunately, however, Brownfield's study tapped differential association by measuring *crime* favorable definitions rather than *gang* favorable definitions, thereby constraining the interpretation of the findings.

Next, studies that analyzed the G.R.E.A.T. middle school data (Esbensen & Deschenes, 1998; Esbensen et al., 2001), the Pittsburgh Youth Study (Lahey, Gordon, Loeber, Stouthamer-Loeber, & Farrington, 1999), the Seattle Social Development Project (Hill, Howell, Hawkins, & Battin-Pearson, 1999), and an analysis of data gathered from Miami-Dade public school youth (Eitle, Gunkel, & Van Gundy, 2004) each indicated that association with delinquent peers significantly predicts gang membership.

Furthermore, studies by Winfree, Bäckström, et al. (1994) and Winfree, Mays, et al. (1994) specifically measured differential association with gang members as a predictor of gang membership, and results were supportive of differential association hypotheses. These two studies also assessed differential association's impact on gang membership by employing measures that tracked the pro-gang attitudes of peers and adults, but neither of those measures were significant net of the peer gang membership measure. Finally, qualitative investigations conducted by Decker and Van Winkle (1996), Sanchez-Jankowski (1991), and Vigil (1988) were supportive of the notion that association with gang-involved family members can precipitate gang membership.

**The present study**

The major empirical purpose of the present study was to extend the literature by assessing the relative independent effects on gang membership of differential association and self-control measures in terms of both strength and significance. Previous research findings together with the theoretical analyses detailed earlier yielded an expectation that self-control and differential association measures would each exert significant effects on gang membership provided that differential association was tapped directly by tracking association with those affiliated with gangs. Gottfredson and Hirschi's (1990) account of the nature of gangs and gang membership, however, prompted examination as to whether the association between differential association and gang membership would be as Gottfredson and Hirschi suggested, either spurious or partially spurious. In addition, the possibility presented itself that at least some of the association between self-control and gang membership might be attributable to the covariation of self-control with association with gang members.

Esbensen et al. (2001) provided some insight into these issues by virtue of their specification of a multivariate model that included both self-control measures and social learning measures. Those researchers found, in a series of bivariate analyses, that impulsivity and risk-seeking items predicted self-report measures of ever having been in a gang, current gang membership, membership in a delinquent gang, membership in an organized gang, and core gang membership (see also Esbensen & Deschenes, 1998 for similar results also using the G.R. E.A.T. data). In spite of this, their multivariate analyses, which included demographic variables together with social learning variables and the same outcome measures, revealed that self-control failed to significantly predict any of the outcomes.

The present study offered a more comprehensive measure of self-control by drawing on ten items from the Grasmick et al. (1993) scale. More importantly, Esbensen et al. (2001) examined the impact of social learning by way of delinquent peers, pro-social peers, commitment to negative peers, commitment to positive peers, neutralization, and perceived guilt measures. Thus, their finding that the effect of self-control disappears upon control for social learning variables is ambiguous. That is, the finding may well have been attributable to mediation given the nature of the social learning measures they used. Also, if the outcome variable of interest is gang membership, a more precise test of differential association theory might call for specific assessment of differential associations with those who have been, or are, gang-involved.

In order to help address these shortcomings, differential association was measured with a range of items that tapped familial gang membership as well as associations with best friends in gangs. Given Akers' (1998) contention that all of the primary learning mechanisms operate within the purview of differential association, a direct measure of the gang membership of associates would seem to be particularly important when assessing the comparative impact of differential association since concentration on a single, indirect aspect of differential association such as "gang favorable" definitions unavoidably excludes effects emanating from the other primary learning mechanisms that, according to Akers, are at work in differential association. Moreover, as was indicated above (Winfree, Bäckström, et al., 1994; Winfree, Mays, et al., 1994), there are specific indications that disproportionate exposure to gang favorable definitions might not be the mechanism by which differential association impacts the likelihood of gang membership. Finally, controlling for variables such as parental gang membership would seem to do a better job of clarifying the mediation issue since parental gang membership is unlikely to succeed respondents' self-control.

*The sample*

The data for this study were obtained from a random cluster sample of inmates housed in a jail facility located in a large California

city. The sheriff's department made 2,800 of the 3,200 inmates housed in the facility accessible to researchers.<sup>2</sup> Ten percent of the inmates, clustered within the natural division of floors and pods inside the jail, were randomly selected for the study. A 72 percent response rate was obtained resulting in a sample size of two hundred. Inmate responses were collected via face-to-face interviews during a six-week period between December 2005 and January 2006.<sup>3</sup>

Due to a gender imbalance in the target population reflective of national jail trends (Harrison & Beck, 2005), females were oversampled to help ensure adequate representation. In order to adjust for the oversampling of females, weights were calculated that corresponded to the reciprocal of the probability of selection. Next, the procedure employed by Tark and Kleck (2004) was used so as to avoid artificially inflating the sample size. This procedure involved creating a new weight variable by dividing unmodified weights by the mean weight. As Tark and Kleck (2004) noted, "[s]ince the average value of this new weight equals one, apparent sample sizes are exactly equal to the actual unweighted sample size, and significance tests are not distorted" (p. 869). Finally with respect to gender, while the sampling frame was 73 percent male and 27 percent female, the sample was composed of 65 percent males and 35 percent females as a consequence of the fact that females were more likely to participate than males.

With respect to age, sheriff department records at the time of the survey indicated that the mean age of the inmates housed in the facilities was nearly thirty-three years old, while the mean age of the sample was nearly thirty-two years old. In regard to ethnicity, sheriff department records indicated that incarcerated inmates were 54 percent Hispanic (sample 53 percent), 26 percent Caucasian (sample 20 percent), 16 percent African American (sample 18 percent), 3 percent Asian (sample 3 percent), 1 percent other (4 percent reported to another ethnicity and 1 percent Native American). Lastly with respect to the sample, missing values were handled using listwise deletion.

*Measures*

Means and standard deviations of all measures appear in Table 1.

**Table 1**  
Descriptive statistics

Variable	Full sample	Non-gang	Former	Current
	Mean (sd)	Mean (sd)	Mean (sd)	Mean (sd)
Age	31.67 (0.48)	33.87 (9.96)	30.15 (7.36)	25.92 (6.45)***
Male	.87 (0.34)	.80 (0.40)	.76 (0.44)	.88 (0.33)
Non-White	.79 (0.40)	.77 (0.42)	.87 (0.34)	.84 (0.37)
Low SES	.47 (0.50)	.39 (0.49)	.55 (0.51)	.73 (0.45)***
Non-intact household	.32 (0.47)	.28 (0.45)	.33 (0.48)	.47 (0.51)*
Low self-control	42.77 (17.4)	41.00 (17.2)	43.98 (18.6)	49.17 (16.2)**
Parental gang membership	0.10 (0.39)	0.01 (0.10)	0.06 (0.25)	.33 (0.48)***
Older relative gang membership	0.27 (0.76)	0.05 (0.23)	0.32 (0.60)***	1.10 (1.40)***
Older sibling gang membership	0.12 (0.36)	0.03 (0.16)	0.12 (0.33)	0.42 (0.50)***
Gang friends	1.66 (2.14)	0.92 (1.66)	2.38 (2.32)***	3.95 (1.83)***
Duration of gang membership	-	-	5.92 (3.63)	12.70 (5.71)***
Sample size	200	136	27	33

Notes: Pearson chi-square tests were run for nominal level variables to examine significance between the three groups (non-gang, former gang, current gang). Independent sample t-tests were run to examine significance for all other variables. The "older relative gang membership" variable does not include repeat relationships. For example, having two older brothers in a gang counted as one type of relationship. Thus, the maximum total number of relationships is ten, corresponding to the number of relationships inquired about. Finally, high scores (unstandardized) reflect lower levels of self-control.

\*p < .05.  
\*\*p < .01.  
\*\*\*p < .001.



## Dependent variable

### Gang membership

Gang membership was assessed using a self-nomination method. The self-nomination method has been used in previous research and is accepted in the gang literature (e.g., Curry & Decker, 1998; Esbensen et al., 2001; Hope & Damphousse, 2002). Following Hope and Damphousse (2002), the gang membership dependent variable had three categories: former gang membership, current gang membership, and never in a gang (non-gang member).

Respondents were asked two questions pertaining to gang membership. First, they were asked “have you ever in your lifetime been a member of a gang?” Second, they were asked “are you currently a member of a gang?” One would logically expect that those who answered “yes” to current gang membership would also answer “yes” to “ever in their lifetime” membership, and a review of the data confirmed this. Thus, “current gang members” were those who answered “yes” to this question. “Former gang members” were those who answered “no” to the “are you currently a member of a gang” question and “yes” to the “have you ever in your lifetime been a member of a gang” question, and “non-gang members” were those who answered “no” to each question.

With respect to the inclusion of former gang membership as a separate outcome measure, although it is true (as discussed above) that self-control may not exhibit sufficient stability over time to justify an expectation that it will predict phenomena antecedent to the occasion of its measurement (such as former gang membership), there were nonetheless reasons for including it. First, if former gang members were combined with non-gang members for purposes of contrasting this combined group with the current gang member group in logistic regression analyses, the results would be distorted precisely to the degree that former gang members are more similar to current gang members than they are to non-gang members. On this score, Katz, Webb, and Decker (2005) noted that their research indicated that “...combining past and current gang members into one group might mask important attitudinal and behavioral differences according to the extent of gang association” (p. 83).

Moreover, the prospect of wholesale exclusion of former gang members from analyses seemed odd, particularly given the centrality of the notion of gang membership to the study. Next, as argued above, *a priori* it seems unlikely that former gang membership could cause, for example, parental gang membership, which was a key independent measure in the current study. Finally, inclusion of the measure allowed for additional comparisons with the results obtained by Hope and Damphousse (2002).

## Independent variables

### Self-control

Self-control was measured with eleven items drawn from the Grasmick et al. (1993) scale with responses ranging from 1 (completely disagree) to 10 (completely agree). Appendix A details the eleven items examined. A principal components analysis of the eleven items was conducted, and results indicated that the “I’m more concerned about what happens to me in the long run than in the short run” item loaded poorly (.025) on the first factor, and so that item was dropped. A principal components analysis of the remaining ten items produced a solution wherein the first factor explained approximately 29 percent of the variance (eigenvalue 2.854) with a break of approximately 1.3 with respect to the second factor (eigenvalue 1.532). The largest break between remaining factors was .367 (between the second and third factors), and so a unidimensional structure was assumed following the logic of the Scree test (Nunnally, 1967). Standardized factor scores for the variable were subsequently computed using Bartlett’s regression method, and the resulting scale had a Cronbach’s alpha of .711.

### Differential association: familial gang membership

Familial gang membership was tapped by asking respondents whether “when you were growing up, was anyone in your immediate family a member of a gang?” Respondents who answered “yes” to this question were then asked to indicate with binary responses whether they had a grandfather, grandmother, father, mother, older brother, older sister, aunt, uncle, or cousins involved in a gang. Respondents were free to supply multiple binary responses.

On the basis of these responses, several measures of familial gang membership were constructed. First, two dichotomous measures were generated. The first dichotomous measure, labeled “parental gang membership” sorted those who indicated that, while growing up either their parents or stepparents were involved in gangs from those who did not. The second dichotomous measure, labeled “older sibling gang membership,” sorted those who indicated that older siblings, again when respondents were growing up, were involved in gangs from those who did not. In addition, a summative measure was constructed (labeled “older relative gang membership”) tapping the gang membership of parents, stepparents, grandparents, aunts, and uncles when respondents were growing up. Other measures included age, sex (female = 0, male = 1), ethnicity (0 = White, 1 = non-White), SES (care providers growing up received government aid; no = 0, yes = 1), and non-intact household (presence of both male and female care providers when growing up; 0 = yes, 1 = no). Lastly, an open-ended measure was included that allowed respondents to indicate, on a 0 to 5 scale, the number of their best friends that were gang-involved.

### Stability and causal order

The current study was cross-sectional in nature, which clearly raised issues regarding causal order. It was believed that this research could nonetheless prove informative for the following reasons. First, favorable results for either of the two theories might be viewed as “best case scenario” results. That is, while it was true that significant results would not be determinative in regard to causal impact, unfavorable results would have been quite damaging in that regard. Therefore, it was believed that significant results for key measures would provide a basis for future longitudinal research.

Second, two differential association measures seemed relatively unproblematic in regard to causal order issues. Thus, because it was difficult to believe that respondent gang membership antedated the gang membership of their parents, the parental gang membership measure appeared to be reasonably resistant to causal order concerns. Similar reasoning generated some confidence in connection with causal order issues and the older relative gang membership measure. Additional discussion of causal order issues pertaining to differential association measures appears in forthcoming sections.

The issue of the stability of self-control is closely connected with the causal order issue. While Gottfredson and Hirschi (1990) maintained that self-control exhibits rank order stability across time, this issue is unsettled (see, e.g., Burt et al., 2006; Hay & Forrest, 2006; Mitchell & MacKenzie, 2006; Turner & Piquero, 2002; Winfree et al., 2006). To the degree that self-control is unstable, cross-sectional conclusions regarding a causal effect of self-control on outcome measures are clearly problematic. Once again, however, this difficulty is perhaps tempered somewhat if one views cross-sectional results as constituting the best case scenario for self-control. Finally, additional discussion of causal order issues pertaining to self-control appears in subsequent sections.

## Results

### Descriptive analyses

Descriptive analyses (presented in Table 1) consisted primarily of independent sample t-test comparisons and revealed that former

gang members were distinguishable from those who reported no gang membership at any point in the life course only with respect to the differential association measures tapping older relative gang membership and gang friends. Current gang members, on the other hand, were distinguishable from those who reported no gang membership at any point in the life course with respect to all independent variables exclusive of race and gender. Thus, current gang members were younger and more likely to have been raised in non-intact households that received government assistance than adult jail inmates who reported no gang membership at any point in the life course. Furthermore, in comparison to the “no gang membership” group, current gang members exhibited poorer self-control and were more likely to report differential association with gang involved individuals. Certain descriptive comparisons are reserved for the discussion section since they may shed light on the interpretation of the multivariate findings.

*Multivariate results predicting former gang membership*

An independent samples t-test indicated no significant difference with respect to self-control levels as between former gang members and those never in a gang. Given that logistic regression utilizes variance estimates differently, and for a different purpose than t-tests, a series of logistic regressions was executed in order to evaluate the effect of self-control on former gang membership. On the basis of previous research findings alluded to earlier as well as theoretical expectations, one-tailed *p* values were calculated with respect to assessing the significance of the self-control measures.

Table 2 reports results from the first series of logistic regressions. Model 1 was a reduced model. Results showed that self-control did not significantly predict gang membership. It should be noted in regard to Models 2-5, that the models were constructed in accordance with a logical pattern that was replicated in the logistic regressions predicting current gang membership. That is, the variation in the measure of familial gang membership used in Models 2-5 was intended to track the relative degree of stringency with respect to testing self-control and differential association effects, with later models presenting a greater *a priori* possibility of statistical mediation of the putative self-control effect. In other words, since it is the case that statistically speaking, Models 2-5 partialled the various familial gang membership variables out of the self-control variable, the possibility of causal order bias with respect to the self-control effect existed insofar as particular differential associations actually succeed respondent gang membership.

Thus, Model 2 incorporated a measure of parental gang membership, which arguably presented less concern regarding causal order than Model 3, which assessed the comparative impact of older relative

gang membership and self-control. Model 4 assessed the comparative impact of older sibling gang membership and self-control on former gang membership, which presented more pronounced causal order concerns. Model 5 incorporated an ordinal measure of the number of best friends involved in a gang, which arguably presented the greatest concern regarding causal order. Finally, Model 6 departed from the aforementioned pattern and was designed to assess the relative independent effects of the parental gang membership, older sibling gang membership, and gang friends measures.<sup>4</sup>

Unsurprisingly given the results from Model 1 (the reduced model), the effect of self-control was insignificant across Models 2-5. With respect to the differential association variables, the parental and sibling gang membership measures failed to achieve significance, an issue reserved for the discussion section. The remaining differential association measures, however, did achieve significance, with odds ratios of 1.26 (*p*<.05) for the gang friends measure and 4.62 (*p*<.05) for the gang-involved older relatives measure. Thus, for example, a unit increase in the gang friends measure corresponded with a 26 percent greater likelihood of having reported former gang membership, and a unit increase in the gang-involved older relatives measure corresponded with a more than four-and-one-half times greater likelihood of having reported former gang membership.

In connection with the significant gang friends measure, since it was conceptually coherent to suppose that gang membership produced variation in the gang friends measure rather than the other way around, causal order is a concern. While the cross-sectional nature of the data intrinsically constrained the authors' ability to contend with this issue, a supplementary analysis was conducted that might have indirect implications with respect to causal order.<sup>5</sup> Among those who reported either current or former gang membership, a significant difference existed (*df* = 61; *t* = 2.73; *p* < .01) with respect to the mean number of best friends in a gang as between those who reported parental gang involvement (*M* = 4.69; *SD* = .75) and those who did not (*M* = 2.96; *SD* = 2.24). This seemed to the authors to provide some evidence, admittedly indirect, consistent with the possibility that the number of gang friends might have caused gang membership. That is, under the assumption that the parental gang involvement measure was strong with respect to causal order concerns, one explanation for the preceding significant difference is that parental gang involvement, whether due to learning theory, control theory, or perhaps even social disorganization considerations, helped foster conditions conducive to respondent interaction with individuals who were themselves gang involved, which in turn could have generated friendships and subsequent respondent gang involvement. Alternatively, and perhaps more plausibly given that the gang friends measure tapped “current” gang friends, a more subtle mechanism might have been in play. That is, for the preceding theoretical reasons it could be that parental gang

**Table 2**  
Logistic regression models examining former gang membership (n = 159)

Variable	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	b	Exp(b)	b	Exp(b)	b	Exp(b)	b	Exp(b)	b	Exp(b)	b	Exp(b)
Age	-0.04	0.96	-0.04	0.96	-0.03	0.97	-0.04	0.96	-0.03	0.97	-0.02	0.98
Male	-0.26	0.77	-0.26	0.77	-0.11	0.90	-0.12	0.90	-0.21	0.81	-0.03	0.97
Non-White	0.93	2.53	0.93	2.54	0.81	2.26	0.79	2.19	0.79	2.20	0.61	1.85
SES	0.40	1.50	0.41	1.50	0.33	1.40	0.29	1.34	0.35	1.42	0.27	1.30
Non-intact household	-0.10	0.91	-0.10	0.91	-0.20	0.82	-0.17	0.85	-0.15	0.86	-0.37	0.69
Low self-control	0.37	1.44	0.37	1.44	0.37	1.45	0.32	1.38	0.26	1.30	0.19	1.21
Parent gang	-	-	-0.11	0.90	-	-	-	-	-	-	-0.49	0.62
Older relative gang	-	-	-	-	1.53	4.62*	-	-	-	-	-	-
Older sibling gang	-	-	-	-	-	-	1.62	5.05	-	-	1.80	6.06
Gang friends	-	-	-	-	-	-	-	-	0.23	1.26*	0.25	1.28*
-2 log likelihood	114.76		114.76		109.46		112.18		111.04		120.60	
Nagelkerke R <sup>2</sup>	0.10		0.10		0.16		0.13		0.14		0.16	

\**p* < .05.  
 \*\**p* < .01.  
 \*\*\**p* < .001.

involvement while respondents were growing up made respondents more *amenable* throughout the life course to forming friendships with those who were gang involved, which in turn might have enhanced the likelihood of gang involvement.

Finally, the results from Model 6 were in keeping with previous models in that the self-control measure did not achieve significance and the gang friends measure was the only differential association measure that did achieve significance.

#### Multivariate results predicting current gang membership

Turning now to the round of models that predicted current gang membership, Table 3 indicates that with respect to Models 1–5, the self-control findings were diametrically opposed to those obtained in the former gang membership regressions in that self-control achieved significance across each of the models, with odds ratios confined to the rather narrow range of 1.59 ( $p < .05$ ; one-tailed) to 1.76 ( $p < .05$ ; one-tailed). With respect to the differential association measures, each was highly significant, with odds ratios ranging from 1.80 ( $p < .001$ ) for the gang friends measure to 29.42 ( $p < .001$ ) for the older siblings measure.

It should be noted here that the significance of the self-control variable across Models 1–5 may well have been attributable in whole or in part to issues pertaining to causal order. The next section presents reasoning (to some degree based in the fact that self-control proved insignificant in the round of models predicting former gang membership) that at least some of the self-control effect on gang membership was attributable to reverse causal order. Of course, there may also have been causal order issues with respect to the putative effect of the differential association measures, although it seems difficult to make the case that current gang membership was responsible for causing parental gang involvement. Similarly, it also seems difficult to make the case that older relative gang involvement was caused by current gang membership. In addition, the contention that those effects, which are quite large, essentially stood proxy for the failure of socialization processes to instill self-control should be viewed as defeated by the fact that the models controlled for respondent self-control.

With respect to Model 6, two key findings emerged. First, the insignificance of the self-control measure suggested that the effect of self-control on gang membership might have been entirely attributable to the covariation of self-control with some combination of the differential association measures included in Model 6. Second, the pattern of independent effects of the differential association measures largely conformed to the pattern exhibited in Models 2, 4, and 5. That is, the older sibling measure exhibited the largest effect (odds ratio 75.76;  $p < .001$ ), followed by the parental gang membership measure

(odds ratio 19.26;  $p < .05$ ), and finally, the gang friends measure (odds ratio 1.84;  $p < .05$ ).

#### Discussion, limitations, and conclusion

While the cross-sectional nature of the study clearly raised causal order issues, it was believed that at least one conclusion could be drawn with some degree of confidence and that several other plausible conclusions could be drawn that may prove useful as guides to future longitudinal research. The highly significant effect of the parental gang membership variable in the model that predicted current gang membership seemed to raise doubts concerning the validity of Gottfredson and Hirschi's account of gangs and gang membership at the same time it provided fairly strong evidence in support of differential association theory. This is because parental gang membership significantly predicted current gang membership net of controlling for self-control. In turn, this suggested that parental gang membership contributed to current gang membership aside from whatever impact on self-control it might have exerted by virtue of the possibility that it in part measured poor socialization practices. Furthermore, and with reference to the causal order issue, it seemed impossible to conceive of current gang membership as the cause of parental gang membership when respondents were growing up. Therefore, causal order seemed not to be much of a concern, at least with respect to this measure, and quite possibly with respect to the "older gang relative" measure as well. Additional remarks with regard to causal order are presented shortly.

Next, and from a rather general point of view, if Gottfredson and Hirschi's (1990) account of gangs and gang membership as reducible ultimately to low self-control combined with opportunity was valid, in the current study differential association measures should have been spuriously associated (or very nearly so) with gang membership due to the association of each with low self-control (assuming that differential association was measured so as to allow for the logical possibility of self-control's temporally preceding the differential association(s) [see, e.g., Evans, Cullen, Burton, Dunaway, & Benson, 1997] who make a similar point with respect to the outcome variable "crime"). This study yielded a different conclusion: the differential association measures were significant and generally speaking robust in terms of the magnitude of effect in comparison to self-control across all models, with the exception of parental gang membership and older sibling gang membership in models that predicted former gang membership (their insignificance will be discussed shortly).

Of course, the fact that most of the differential association measures exhibited significant independent effects across the models predicting former and current gang membership did not conclusively establish causal influence since the models were cross-sectional. On this score, it

**Table 3**  
Logistic regression models examining current gang membership ( $n = 164$ )

Variable	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	b	Exp(b)	b	Exp(b)	b	Exp(b)	b	Exp(b)	b	Exp(b)	b	Exp(b)
Age	-0.13	0.88***	-0.10	0.90**	-0.12	0.89**	-0.12	0.89**	-0.06	0.94	-0.04	0.96
Male	0.60	1.82	0.65	1.91	0.90	2.46	0.48	1.62	0.40	1.49	0.42	1.52
Non-White	0.63	1.89	0.58	1.78	0.42	1.53	1.07	2.90	0.47	1.60	0.59	1.81
SES	1.19	3.29**	0.89	2.43	0.86	2.37	0.73	2.07	0.91	2.49	-0.62	0.54
Non-intact household	0.56	1.76	0.69	1.99	0.74	2.10	0.26	1.30	0.74	2.10	0.70	2.02
Low self-control	0.53	1.69**	0.50	1.65*	0.57	1.76*	0.46	1.59*	0.48	1.61*	0.40	1.49
Parent gang	–	–	3.09	22.02***	–	–	–	–	–	–	2.96	19.26*
Older relative gang	–	–	–	–	1.98	7.27***	–	–	–	–	–	–
Older sibling gang	–	–	–	–	–	–	3.38	29.42***	–	–	4.33	75.76***
Gang friends	–	–	–	–	–	–	–	–	0.59	1.80***	0.61	1.84***
-2 log likelihood	114.31		100.02		87.15		94.86		90.39		72.90	
Nagelkerke R <sup>2</sup>	0.36		0.47		0.56		0.50		0.53		0.70	

\* $p < .05$ .

\*\* $p < .01$ .

\*\*\* $p < .001$ .

was argued above that causal order did not present much of a concern with respect to the parental gang membership measure. Two general considerations might serve to somewhat diminish causal order concerns regarding the other differential association measures. First, due to the well-documented facilitation effect associated with gang membership, the intimate relationship of differential association theory and social learning theory, and the host of longitudinal research finding significant effects for social learning measures on a variety of criminal outcomes (see, e.g., Akers, 1998), it seemed doubtful to the authors that each of the independent differential association effects was fully compromised by causal order issues. Second, the magnitudes of some of the differential association effects were sufficiently high (for example, the older siblings odds ratio of 75.76 in Model 6 predicting current gang membership and the older relative odds ratio of 7.27 in Model 3 predicting current gang membership) that it seemed to the authors reasonable to conclude that at least a small portion of these observed effects was causal in nature.

The finding that self-control significantly predicted current gang membership in Models 2–5 but not former gang membership also calls for elaboration. While Hope and Damphousse's (2002) interpretation in terms of mediation by delinquency (which would be crime in this case given the composition of the sample) may have contributed to the explanation, this is not the only possible interpretation of such a finding.

An alternative interpretation of the finding arises from recent studies (Burt et al., 2006; Hay & Forrest, 2006; Mitchell & MacKenzie, 2006; Turner & Piquero, 2002) that raised questions as to just how stable self-control is. Keeping in mind that the comparison group in each of the logistic regressions consisted of adults in a jail population who reported never having been involved in a gang, one interpretation (albeit a rather disturbing one) of the significant association of self-control with current gang membership is that gang membership exacerbated self-control problems such that upon exiting from a gang, self-control levels improved at least to levels similar to those found in general jail populations. In turn, such levels may well have been comparable to those of former gang members.

This interpretation is admittedly speculative, but it is not entirely unmoored to extant scholarship compatible with the notion that environmental influences can impact self-control (see, e.g., Muraven, Pogarsky, & Shmueli, 2006; Wikström & Treiber, 2007). Furthermore, the interpretation is consistent with Hope and Damphousse's finding that self-control exerted a larger effect on current gang membership than former gang membership in reduced models.

In order to assess this issue empirically, self-control factor scores were regressed on current gang membership controlling for age, former gang membership controlling for age, and the duration of gang membership controlling for age.<sup>6</sup> Results were in line with t-test results presented in Table 1 in that current gang membership was significant ( $\beta = .19$ ;  $p < .05$ ) but former gang membership was not ( $\beta = .09$ ; ns). Of particular interest was the fact that the duration of gang membership exerted a significant and positive effect ( $\beta = .15$ ;  $p < .05$ ) on the self-control outcome measure, which indicated that longer gang involvement was indeed associated with poorer self-control. Hence the evidence, while limited, was consistent with the possibility that gang membership, and the duration of gang membership, lowers self-control.

Overall on the basis of current results, a tenable argument can be made that in general the predictive power with respect to gang membership for differential association derived variables exceeded that of self-control. For example, if one examines the current gang membership models, unit increases in the two differential association measures that presented the least concern regarding causal order (parental gang membership (which was coded dichotomously) and older relative gang membership) respectively increased the odds of gang membership by factors of 22.02 and 7.27, as compared to factor increases in the odds of gang membership of 1.65 and 1.76 for one standard deviation increases in self-control in the same models. Moreover, it should be recalled that self-control failed to significantly

predict current gang membership in Model 6. Given that Model 6 included three differential association measures, it may well have been the case that the significance of self-control as a predictor of current gang membership was entirely attributable to self-control's covariation with some combination of the differential association measures. Finally with respect to Model 6 and current gang membership, there was evidence in support of the tentative conclusion that older sibling gang membership exerted the greatest effect of any of the differential association measures (odds ratio = 75.76). It must be acknowledged, however, that a comparison of these effect sizes presupposes a degree of satisfaction regarding causal order issues as they might pertain to the three differential association measures.

The findings of the current study yielded other theoretical implications. If it is true that the independent effects of differential association and self-control on crime outcomes are as similar as Pratt and Cullen's (2000) meta-analytic study suggested, then if it is indeed the case that the magnitude of the impact of differential association measures on gang membership substantially exceeds the impact of self-control on gang-membership, a potentially important implication arises. That is, one might wonder whether, contrary to Hope and Damphousse (2002), gang membership is really best conceived as an act analogous to crime, which in turn would have ramifications for the "definition of a gang" dispute. If gang membership is not statistically tantamount to a criminal act, there is that much more reason to believe it might not be conceptually tantamount to a criminal act either, which raises a host of issues that unfortunately go well beyond the scope of this article.

Next, the present findings may have implications in regard to the possible mechanisms underlying the facilitation effect. To the degree that trust in others is a function of differential association with others (in terms of frequency, duration, intensity, and priority; see Simpson, 2007 for a theoretical discussion in principle compatible with this possibility), and to the degree that trust facilitates cooperation, it may be that if differential association leads to gang membership there is a greater likelihood of cooperative behavior once in the gang. If this is so, it would undercut the notion, espoused by Gottfredson and Hirschi (1990) that gangs are invariably composed of individuals who by definition are unwilling to cooperate.

On this score and from a game-theoretical perspective, Sethi and Somanathan (2003) remarked most strikingly (particularly if their sentiments are viewed with an eye to the gang context) that *even when group interactions are sporadic* (see, e.g., Starbuck, Howell, & Lindquist, 2001), there is a formal basis for supposing that reciprocity can obtain if, for example:

...one could allow for the possibility that individuals interact selectively, rather than randomly, with others in the population, or condition their behavior on some potentially observable property that identifies a group to which their opponent belongs. (p. 11)

These sentiments seem consonant with the differential association perspective but dissonant with Gottfredson and Hirschi's self-control perspective, which would imply that Gottfredson and Hirschi's position was invalid insofar as it implied there can be no formal basis for cooperative behavior. If, on the other hand, the general theory is taken to acknowledge that there is a formal basis for cooperation, then it is invalid to the precise degree that reciprocity takes place and helps to explain phenomena such as crime and gang membership.

This article concludes by confessing perplexity with regard to the finding that the parental gang membership and older sibling gang membership effects were insignificant in models predicting former gang membership. To address this, t-test comparisons were performed for current and former gang members' responses to a survey question tapping how long, measured in years, they had ever been involved in a gang. Results indicated a significant difference ( $df = 55$ ;  $t = 5.20$ ;  $p < .001$ ) between former ( $M = 5.9$ ;  $SD = 3.63$ ) and current ( $M = 12.70$ ;  $SD = 5.70$ ) gang members. Thus, current gang members



were younger ( $M = 25.92$ ;  $t = 2.30$ ;  $p < .05$ ) than former gang members ( $M = 30.15$ ) and reported greater duration of gang membership. Might it be the case that parents and older siblings tend to contribute to membership in more cohesive, organized gangs that are so constituted as to facilitate longer participation within particular gangs? Correspondingly, might the impact of differential associations with, for example, older relative gang members tend to reflect structural inducements that encourage more sporadic and less committed participation in a series of gangs over a shorter time frame? If something along these lines is happening, one should, since former gang members were once current gang members, be able to draw distinctions within the class of current gang members in terms of the nature of the gang or gangs they are involved with. It must be acknowledged that this supposition is far from completely satisfying, but unfortunately the data did not permit additional insight on the issue.

In sum, on the basis of previous research together with the results of the present study, self-control may exert a significant independent effect on the likelihood of self-nominated gang membership, but that effect is likely to be rather small. Tentatively speaking, it may be the case that this small effect is partially attributable to reverse causal order. Indeed, it might even be the case that the self-control effect on gang membership vanishes if self-control is examined simultaneously with a series of differential association measures. In addition, the present findings presented fairly persuasive evidence that, contrary to Gottfredson and Hirschi's (1990) expectations, differential association with gang members exerted a significant effect on gang membership net of self-control and that the effect might have been stronger than that exerted by self-control.

From a more overarching perspective, there may be serious problems with Gottfredson and Hirschi's (1990) explanation of the nature of gangs and gang membership, which would imply that conceptualizing gang membership as an act analogous to crime may be problematic and that gangs may contain individuals with a wide range of self-control levels, at least some of whom may well engage in cooperative criminal behavior.

Of course, in the future, researchers might consider surmounting the cross-sectional limitation of this study by investigating the preceding possibilities with a panel design. Also by way of limitations, the measures of differential association made it impossible to specify the precise mechanisms by which differential association influenced gang membership, if it in fact did. It would be interesting to examine the degree to which these mechanisms might intersect with differential association mechanisms that produce crime; it seems that doing so might illuminate the definitional issue as well as provide insight into the mechanisms underlying the facilitation phenomenon.

## Appendix A. Self-control items

Item	Mean	SD	Loading
Often, when I am angry at people, I feel more like hurting them than talking to them about why I am angry.	3.19	3.20	.707
When I am really angry, other people better stay away from me.	4.36	3.75	.636
I will try to get things I want even when I know it's causing problems for other people.	3.31	2.97	.607
I lose my temper pretty easily.	4.23	3.56	.607
I sometimes find it exciting to do things for which I might get in trouble.	4.30	3.55	.584
I often act on the spur of the moment.	6.75	3.10	.519
I often do whatever brings me pleasure here and now, even at the cost of a distant goal.	5.31	3.42	.488
I don't devote much thought and effort to preparing for the future.	4.24	3.19	.360
I dislike really hard tasks that stretch my abilities to the limit.	3.85	3.15	.353
When things get complicated, I tend to quit or withdraw.	3.75	3.09	.331

Notes: The item "I'm more concerned about what happens to me in the long run than in the short run" was dropped due to its weak loading (0.025). Upon dropping this item, Cronbach's alpha increased from .68 to .71.

## Notes

1. In this connection, criminologists might note Morselli and Tremblay's (2004) finding that low self-control detracts from the capacity to translate criminal networking into increased criminal earnings.

2. There are a total of four facilities housing inmates. Inmates from a satellite facility (two hundred total) were excluded for reasons including security status, inaccessibility and distance of travel to the facility, and supervisory work status necessitating absenteeism during interview hours. Also excluded from the sample were administratively segregated inmates, those extremely prone to violence, and inmates with validated, serious psychological concerns.

3. All interviews took place inside attorney rooms located on respective floors of the jail. Prior to initiation of the interviews, training sessions were held for all of the interviewers involved in the study. In order to minimize problems associated with the "interviewer effect" relating to gender (Pollner, 1998) and race (Davis & Silver, 2003), three different training sessions were held. The first session involved discussion of topics such as body language, dismissal of those who might refuse to participate, active listening, impartiality, probing techniques, and maintaining inmate focus. The second was held with minimum security inmates and involved an open-ended exchange regarding the survey instrument and the identification of possible difficulties connected with the data gathering process. The final training session was held one-on-one with select inmates in the attorney rooms inside of the jail.

4. The "older relative gang membership" measure was excluded from the model because of its high correlation (Pearson's  $r = .775$ ;  $p < .01$ ) with the parental gang membership measure.

5. The authors wish to thank an anonymous reviewer for prompting this inquiry. 6. The authors wish to thank two anonymous reviewers for suggesting this line of inquiry.

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