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## Understanding Adolescent Delinquency

### The Role of Older Siblings' Delinquency and Popularity with Peers

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The present study examined delinquency concordance and the moderating effects of younger sibling perceptions of older sibling popularity in a sample of 587 adolescent sibling pairs. Using a social learning framework and taking dyad composition into account, perceptions of popularity were hypothesized to strengthen siblings' concordance for delinquency. Older sibling delinquency significantly predicted younger sibling delinquency. Older sibling popularity was not important in predicting boys' delinquency. However, perceptions of older sibling popularity directly predicted reduced delinquency for girls with older sisters. A significant interaction effect was found for girls with older brothers. Older brother delinquency predicted girls' delinquency for girls who perceived their older brother to be relatively popular. There was no delinquency concordance for girls who perceived their older brothers to be less popular.

Recent research suggests that siblings may be an important factor in understanding participation in delinquent activities (e.g., K. J. Conger, 1999;

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Fagan & Najman, 2003; Farrington, 1995; Slomkowski, Rende, Conger, Simons, & Conger, 2001; Snyder, Bank, & Burraston, 2005). Indeed, a number of studies have reported that siblings are concordant for delinquent activities. However, concordance for delinquency has typically been examined in male sibling pairs, and few studies have considered sibling influences in mixed-gender or female sibling dyads (Lauritsen, 1993; Rowe, Rodgers, & Meseck-Bushey, 1992). The association between older and younger siblings' delinquency may be related to several different factors. First, older siblings who engage in delinquent behaviors may serve as an attractive model during early adolescence (10–14 years of age), a time when adolescent youths begin to experiment with delinquent behaviors (Farrington, 2003; Rowe & Farrington, 1997). Second, some younger siblings may view participation in delinquent activities as a route to peer recognition and popularity, particularly if their older sibling is perceived as popular. Social learning theory (Bandura, 1969, 1973) and specifically Patterson (1984) suggest that younger siblings will be likely to imitate behaviors of older siblings if they see these behaviors as successful in attaining a goal, such as popularity among peers. The present study examines the possible effects of older sibling delinquency and perceptions of older sibling popularity in predicting younger sibling delinquency in same-gender and mixed-gender adolescent sibling dyads.

### *Delinquency*

Previous research has highlighted the importance of studying delinquency during adolescence. During adolescence, delinquency increases in frequency, with a peak around age 17 (Farrington, 2003). Given that early adolescence is a time when youths begin to experiment with delinquent behaviors, it is important to understand the factors that contribute to the observed increase (Farrington, 2003; Rowe & Farrington, 1997). Research on adolescent siblings has found concordance for many delinquent behaviors (Conger et al., 2009; Lewin, Hops, Davis, & Dishion, 1993; Reiss & Farrington, 1991). However, the magnitude of concordance has varied across studies (e.g., Lauritsen, 1993; Rowe et al., 1992).

The few studies that have examined gender composition show that it is one important factor in explaining the observed concordance for delinquency. Brother pairs appear to have the highest concordance for delinquency, followed by sister pairs (Fagan & Najman, 2003; Slomkowski et al., 2001). Similarly, Rowe and Farrington (1997) found that same-gender pairs were more alike in their convictions for delinquency than mixed-gender pairs. The results for mixed-gender pairs vary, with some studies showing

little or no concordance (Rowe et al., 1992) and others showing moderate concordance (Conger et al., 2009; Fagan & Najman, 2003; Snyder et al., 2005). The majority of delinquency studies do not include mixed-gender dyads, and even fewer studies distinguish boys with older sisters from girls with older brothers (e.g., Fagan & Najman, 2003).

Although current research suggests that delinquency concordance varies by sibling dyad composition, the underlying mechanisms or social processes that might explain these differences are not clearly understood. Research has started to examine potential moderators of the correlation between older and younger sibling delinquency such as relationship quality (Slomkowski et al., 2001) and family processes such as coercive exchanges (Bank, Patterson, & Reid, 1996). In these studies, delinquency concordance was stronger when siblings enjoyed spending time together or when one sibling coerced the other to participate in deviant activities (Bank et al., 1996; Slomkowski et al., 2001). One possible moderator that has not been explored is the social status of the older sibling and how that might influence the younger sibling's view of the older sibling as a role model. It is hypothesized that an older sibling with higher social status would serve as a more attractive role model and that imitation thus would be more likely to occur, in line with social learning theory (Bandura, 1969, 1973).

### *Perceptions of Popularity*

Adolescence is also a critical time to study the potential influences of popularity as youths become more socially oriented and place greater emphasis on peer status (Eder, 1985; LaFontana & Cillessen, in press; Giordano, 1995). Initial studies of popularity focused on sociometrically popular youths, those who were nominated as well liked by a large percentage of their peer group and not nominated as disliked (e.g., Coie, Dodge, & Coppotelli, 1982). These students tend to be rated as kind, trustworthy, prosocial, and inclusive and also display lower levels of externalizing behavior and aggression (Parkhurst & Hopmeyer, 1998; Sandstrom & Cillessen, 2006).

However, recent studies have begun to differentiate between sociometrically popular (well-liked) and perceived popular youths (e.g., Parkhurst & Hopmeyer, 1998; Sandstrom & Cillessen, 2006). Perceived popularity differs from sociometric popularity, as it is assessed through direct identification of those who are "popular," or "cool," and have high status among the larger peer group. Little overlap has been found between youths who are characterized as popular according to these two separate methods (Parkhurst & Hopmeyer, 1998). Perceived popularity is often conceptualized as involving social prestige, influence, centrality, and

social visibility (Eder, 1985; Parkhurst & Hopmeyer, 1998; Sandstrom & Cillessen, 2006). Unlike sociometrically popular youths, perceived popular adolescents also display an array of negative behaviors such as externalizing behaviors (Sandstrom & Cillessen, 2006) and physical and relational aggression (Cillessen & Mayeux, 2004; LaFontana & Cillessen, 2002; Rose, Swenson, & Waller, 2004), although these tend to be less extreme antisocial behaviors (e.g., teasing and social exclusion). While adolescents appear to acknowledge and understand the balance between such prosocial and antisocial aspects, they also appear to focus more on the benefits of popularity and their aim to achieve and maintain popularity themselves (Jarvinen & Nicholls, 1996). The literature suggests that girls in particular may be sensitive to individual characteristics that contribute to popularity (LaFontana & Cillessen, 1999). Taken together, younger siblings may view popularity as a desirable goal and may attend to their older siblings as a way to attain this goal.

### *The Present Study*

The present study examined sibling delinquency and older sibling popularity in a sample of 587 adolescent sibling pairs. Sibling pairs were coded with the younger sibling as the target adolescent. Both the target and the older sibling reported on their own delinquency, and the targets reported on their perception of their older siblings' popularity.

The goals of this study are to replicate previous findings that demonstrate sibling concordance for delinquency and to further understand this concordance by examining perceptions of popularity. Because we assessed a wide array of delinquent behaviors, we do not expect a direct effect of older sibling popularity on target general delinquency, although Mayeux, Sandstrom, and Cillessen (2008) found a link between perceived popularity and alcohol use and risky sexual behavior. However, we hypothesize that younger sibling perceptions of older sibling popularity will moderate the association between older sibling delinquency and target delinquency. We argue that popularity would make the older sibling an attractive role model and therefore make behavioral imitation, including delinquent behaviors, more likely. We hypothesize that this finding may differ according to the gender composition of the sibling dyad. Specifically, target girls (i.e., younger sisters) are more likely to attend to and be influenced by their perceptions of their older siblings' popularity. Therefore, we expect girls to mimic their older siblings' delinquent behavior when they perceive their older sibling to be popular because girls tend to place more importance on social status and popularity than do boys (LaFontana & Cillessen, 1999).

## Method

### *Participants and Procedures*

Data for this study come from 587 adolescent sibling pairs who were on average 2.4 years apart. These families are part of a longitudinal study assessing economic stress, family relationships, and adolescent adjustment (see Conger & Conger, 2002). This study uses data from 1991 based on 407 families living in rural Iowa with a seventh grader and sibling within four years of age living with two biological parents and an additional 205 sibling pairs from single-parent families living in rural Iowa. Target youths were on average 13.2 years of age ( $SD = 1.4$ ), and older siblings were 15.6 years of age ( $SD = 1.4$ ). The final sample includes 396 families with two parents and 191 families with a single parent who had complete data for variables used in the study. Twin pairs and those cases with missing data were eliminated from the final analyses.

Families were visited in their homes, where both siblings independently completed a series of questionnaires about their individual characteristics, activities, behaviors, and relationships with each other. Each sibling provided written assent before participating in the study.

### *Measures*

*Dyad composition.* Each sibling dyad was coded based on the birth order (older vs. younger) and gender composition of the siblings. There were four possible dyad compositions: 142 brother pairs, 160 sister pairs, 127 boys with older sisters, and 158 girls with older brothers.

*Delinquent behaviors.* Delinquency was assessed with a standard set of questions adapted from a scale developed by Elliott, Huizenga, and Ageton (1985) that is designed to measure unlawful acts by minors. The scale includes 23 items such as "stole something worth less than \$25," "set fires," and "got into fights" and covers a range of behaviors from minor theft and vandalism to more serious offenses such as using a weapon or committing interpersonal violence. Adolescents self-reported how often (0 = never, 4 = six or more times) he or she engaged in these behaviors in the past year. Responses were summed across 23 items to create scores for both older sibling and target self-reported delinquency.

*Perceptions of popularity.* Older siblings' popularity was assessed by targets' report on four items, two of which mapped onto social preference ("he/she is pretty popular with other kids," "he/she hangs out with the popular kids at his or her school") and two of which are generally associated with perceived popularity ("most people he or she knows like him or her," "most kids at his or her school really like his or her friends"). Target adolescents rated

these items on a 5-point scale (1 = strongly agree, 5 = strongly disagree). These two subscales were highly correlated ( $r = .58, p < .01$ ); therefore, we combined them into a single indicator of younger siblings' perception of older siblings' popularity ( $\alpha = .80$ ). Responses were reverse coded and averaged such that higher scores reflected higher perceptions of popularity.

## Results

The means and standard deviations for the delinquency variables are shown in Table 1, and the intercorrelations of all variables of interest can be found in Table 2. Higher levels of younger sibling delinquency were significantly associated with higher levels of older sibling delinquency. As expected, the age of the younger sibling was significantly associated with younger sibling delinquency. Siblings who were closer in age viewed their older sibling as more popular than siblings who were further apart in age.

Hierarchical linear regression was used to evaluate the hypothesized associations among variables. The gender of the older sibling and the gender of the younger sibling were also entered in the first step and were dummy coded with 0 representing female. Older sibling delinquency was added in the first step, as was younger siblings' perceptions of their older siblings' popularity. In addition to the main variables of interest, in Step 1 we included family structure, the age of the younger sibling (target), and the age difference between siblings as controls. Family structure was dummy coded with 0 for two parent-families and 1 for single-parent families. Age difference of the siblings was also dummy coded with 0 for a difference of less than two years and 1 for two years or greater. In Step 2 we entered the two-way interactions between younger and older sibling gender as well as popularity and delinquency. The three-way interactions among these variables were added in Step 3, and the four-way interaction was added in Step 4.

Results for the full model are presented in Table 3. Step 1 explained 15% of the variance. Family structure was significantly associated with target delinquency, with youths in single-parent families more likely to be delinquent ( $\beta = .11, p < .05$ ).<sup>1</sup> The age of the target sibling was significantly

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<sup>1</sup> Family structure was found to have a significant main effect in the model. We initially also examined the interaction of family structure with the gender composition of the dyads. We thought that family structure may operate differentially by gender composition in the transmission of delinquent behavior to younger siblings. When we examined the model with the inclusion of family structure as well as the interaction of family structure by each gender dyad composition dummy variable (i.e., sister pairs, mixed-gender with older sisters, mixed-gender with older brothers), we found that the main effect of family structure became nonsignificant and that all three gender by family structure interactions were nonsignificant. We concluded that these were competing to explain the same variance and therefore kept our previous model, which included only family structure as a main effect.

**Table 1.** Means and Standard Deviations for Target and Older Sibling Delinquency and Target Perceptions of Older Sibling Popularity by Sibling Dyad Composition

	Full Sample		Boys with Older Brothers		Boys with Older Sisters		Girls with Older Sisters		Girls with Older Brothers	
	M	SD	M	SD	M	SD	M	SD	M	SD
Target delinquency	1.74	3.49	2.56 <sup>a</sup>	4.43	2.29 <sup>b</sup>	3.99	1.12 <sup>a,b</sup>	2.53	1.15 <sup>a,b</sup>	2.60
Older sibling delinquency	3.90	6.40	5.18 <sup>c</sup>	8.21	2.54 <sup>c,d</sup>	4.03	3.24 <sup>c</sup>	5.71	4.58 <sup>d</sup>	6.53
Older sibling popularity	3.78	0.77	3.69	0.74	3.75	0.71	3.85	0.81	3.80	0.81

*Note.* Means with the same superscript differ significantly from each other at  $p < .05$ .

**Table 2.** Intercorrelations of the Variables

Measure	1	2	3	4	5	6	7	8	9	10
1. Family structure	—									
2. Age of younger sibling	-.30**	—								
3. Sibling age difference	-.01	.27**	—							
4. Sister pair	-.06	.02	-.01	—						
5. Mixed gender with older sister	.06	-.02	.02	-.29**	—					
6. Mixed gender with older brother	-.02	.05	-.04	-.33**	-.29**	—				
7. Brother pair	.02	-.05	.04	-.32**	-.28**	-.31**	—			
8. Older sibling delinquency	.12**	.15**	-.11**	-.06	-.12**	.06	.11**	—		
9. Perceptions of popularity	-.12**	.06	-.13**	.06	-.02	.02	-.06	-.04	—	
10. Younger sibling delinquency	.10*	.15**	.05	-.11**	.08*	-.10*	.14**	.28**	-.11**	—

\* $p < .05$ , \*\* $p < .01$ .

**Table 3.** Standardized Regression Coefficients Showing the Effect of Family Structure, Age of Younger Sibling, Sibling Age Difference, Gender Composition of the Sibling Dyad, Older Sibling Delinquency, and Perceptions of Popularity on Younger Sibling Delinquency ( $N = 554$ )

Full Model	
Step 1	
$\beta$ family structure	.11**
$\beta$ age of younger sibling	.18**
$\beta$ sibling age difference	.02
$\beta$ gender of younger sibling	.15**
$\beta$ gender of older sibling	.01
$\beta$ older sibling delinquency	.26**
$\beta$ perceptions of popularity	-.15**
$R^2$	.15**
Step 2	
$\beta$ gender of younger sibling $\times$ gender of older sibling	.04
$\beta$ gender of younger sibling $\times$ older sibling delinquency	-.06
$\beta$ gender of younger sibling $\times$ perceptions of popularity	.10
$\beta$ gender of older sibling $\times$ older sibling delinquency	-.05
$\beta$ gender of older sibling $\times$ perceptions of popularity	.09
$\beta$ older sibling delinquency $\times$ perceptions of popularity	-.07
$\Delta R^2$	.01
Step 3	
$\beta$ gender of younger sibling $\times$ gender of older sibling $\times$ older sibling delinquency	.15
$\beta$ gender of younger sibling $\times$ gender of older sibling $\times$ perceptions of popularity	-.15*
$\beta$ gender of younger sibling $\times$ older sibling delinquency $\times$ perceptions of popularity	.17
$\beta$ gender of older sibling $\times$ older sibling delinquency $\times$ perceptions of popularity	.22**
$\Delta R^2$	.02*
Step 4	
$\beta$ gender of younger sibling $\times$ gender of older sibling $\times$ older sibling delinquency $\times$ perceptions of popularity	-.22*
$\Delta R^2$	.01*
$R^2$ for full model	.18
$F$	6.97**

\*  $p < .05$ , \*\*  $p < .001$ .

associated with target delinquency ( $\beta = .18, p < .01$ ) such that older target youths reported higher levels of delinquency. The age difference between the siblings was not significantly associated with target delinquency. There was a significant effect for gender of younger siblings such that males reported higher levels of delinquency ( $\beta = .15, p < .01$ ), although no main effect was found for the gender of the older sibling. Older sibling delinquency was positively associated with target delinquency ( $\beta = .26, p < .01$ ). However, contrary to our expectations, younger siblings who perceived their older sibling to be more popular also reported lower levels of delinquency ( $\beta = -.15, p < .05$ ). In Step 2 there were no significant two-way interactions. Step 3 explained an additional 2% of the variance; the gender of younger sibling  $\times$  gender of older sibling  $\times$  perceptions of popularity interaction was significant ( $\beta = -.15, p < .05$ ). The gender of older sibling  $\times$  older sibling delinquency  $\times$  perceptions of popularity interaction was also significant ( $\beta = .22, p < .01$ ). Step 4 explained an additional 1% of the variance; this four-way interaction was qualified by a significant gender of younger sibling  $\times$  gender of older sibling  $\times$  older sibling delinquency  $\times$  perceptions of popularity interaction ( $\beta = -.22, p < .05$ ).

To investigate the nature of this significant four-way interaction, we conducted post hoc analyses examining the three-way interaction gender of older sibling  $\times$  older sibling delinquency  $\times$  perceptions of popularity separately for target boys and target girls. For target boys, only the main effects of age of younger sibling ( $\beta = .14, p < .05$ ) and older sibling delinquency ( $\beta = .26, p < .01$ ) were significant (Table 4). In contrast, for target girls the gender of older sibling  $\times$  older sibling delinquency  $\times$  perceptions of popularity three-way interaction was significant. To follow up on this significant interaction, we examined the older sibling delinquency  $\times$  perceptions of popularity two-way interaction separately for girls with older sisters and girls with older brothers. As shown in Table 5, for girls with older sisters there were significant main effects of family structure ( $\beta = .21, p < .01$ ), age of younger sibling ( $\beta = .26, p < .01$ ), older sibling delinquency ( $\beta = .30, p < .01$ ), and perceptions of older sibling popularity ( $\beta = -.22, p < .01$ ). For girls with older brothers, the interaction was not significant. For girls with older brothers, there were significant main effects of family structure ( $\beta = .19, p < .05$ ), age of younger sibling ( $\beta = .28, p < .01$ ), and older sibling delinquency ( $\beta = .25, p < .01$ ). In addition, the older sibling delinquency  $\times$  perceptions of popularity interaction was significant ( $\beta = .30, p < .01$ ).

A post hoc analysis was used to understand the nature of the older sibling delinquency  $\times$  perceptions of popularity interaction for girls with older brothers. Separate regression analyses were performed for girls who perceived their older brothers to be less popular (i.e., less than the median) and

**Table 4.** Standardized Regression Coefficients Showing the Effect of Family Structure, Age of Younger Sibling, Sibling Age Difference, Gender Composition of the Sibling Dyad, Older Sibling Delinquency, and Perceptions of Popularity on Younger Brother Delinquency ( $N = 269$ )

Final Model for Younger Brothers	
Step 1	
$\beta$ family structure	.05
$\beta$ age of younger sibling	.14*
$\beta$ sibling age difference	.05
$\beta$ gender of older sibling	.05
$\beta$ older sibling delinquency	.26**
$\beta$ perceptions of popularity	-.08
$R^2$	.10**
$F$	4.75**

\* $p < .05$ , \*\* $p < .001$ .

**Table 5.** Standardized Regression Coefficients Showing the Effect of Family Structure, Age of Younger Sibling, Sibling Age Difference, Gender Composition of the Sibling Dyad, Older Sibling Delinquency, and Perceptions of Popularity on Younger Sister Delinquency ( $N = 318$ )

Final Model for Younger Sisters		
	Girls with Older Sisters	Girls with Older Brothers
Step 1		
$\beta$ family structure	.21**	.19*
$\beta$ age of younger sibling	.26**	.28**
$\beta$ sibling age difference	-.02	-.05
$\beta$ older sibling delinquency	.30**	.25**
$\beta$ perceptions of popularity	-.22**	-.06
$R^2$	.28**	.13**
Step 2		
$\beta$ older sibling delinquency $\times$ perceptions of popularity	—	.30**
$\Delta R^2$	—	.09**
$R^2$ for full model	.28**	.21**
$F$	11.72**	6.84**

\* $p < .05$ , \*\* $p < .001$ .



**Figure 1.** Girls' Delinquency Predicted by Older Brothers' Delinquency as a Function of Older Brothers' Popularity.

for girls who perceived their older brothers to be more popular (i.e., greater than the median). In order to maintain sample size, we used a median split to compare delinquency concordance for younger sisters who perceived their older brothers to be more popular and those who perceived their older brothers to be less popular. These post hoc analyses revealed that for girls who perceived their older brothers to be less popular, older brother delinquency was not associated with their own delinquency ( $\beta = .02, p > .05$ ). However, for girls who perceived their older brothers to be more popular, older brother delinquency was strongly associated with their own delinquency ( $\beta = .55, p < .001$ ) (Figure 1).

### Discussion

This study is an important first step in understanding the role of younger siblings' perceptions of older siblings' popularity in explaining sibling concordance for delinquency. Consistent with social learning theory (e.g., Patterson, 1984), there was a main effect of older sibling delinquency in the

full sample. This effect suggests concordance for all sibling dyad gender compositions. While past research has demonstrated this relationship for boys (Lauritsen, 1993; Rowe, Rodgers, & Meseck-Bushey, 1992), this study extends prior research by demonstrating concordance in both mixed-gender and female sibling dyads. The present study is unique in that it ties perceptions of popularity, a construct primarily used in peer research, with behavioral similarity among siblings during adolescence. While older sibling delinquency played a role in younger sibling delinquency, perceptions of popularity of the older sibling was only salient in pairs involving girl targets.

For the full sample, perceptions of popularity predicted younger sibling delinquency. However, the effect of popularity was specific to the gender composition of the dyad. When we examined the interaction effects, we found that the main effect was primarily driven by girls with older sisters. There was no relationship between popularity and delinquency for younger brothers regardless of older sibling gender. It is possible that early adolescent boys do not attend to or place less importance on popularity as an important social goal. Unexpectedly, target girls who perceived their older sisters to be more popular were less delinquent themselves, suggesting that older sister popularity may serve a protective function for early adolescent girls. It could be that popularity and more serious delinquent behaviors (similar to those assessed in the present study) are not typically related for girls. In fact, in the current sample, popularity and delinquency for older siblings were not related ( $r = -.06, p > .05$ ). Obviously further research is required, but taken together these findings may explain how older sisters' popularity serves to limit younger sisters' delinquency.

In addition, we found that target girls' perceptions of their older brothers' popularity moderated the association between older and younger sibling delinquency. Girls with more popular older brothers were similar to their brothers in delinquency. However, there was no delinquency concordance for girls who perceived their brothers to be less popular. That is, for these girls there was a nonsignificant association between their own and their older brothers' delinquency. This result is consistent with our hypothesis and with social learning theory (i.e., motivation to imitate successful behaviors) whereby younger sisters may actively mimic delinquent behaviors of their older brothers if they view this as a means to attain popularity. We argue that the tendency for girls to pay more attention to social status (e.g., LaFontana & Cillessen, 1999) makes them more likely to imitate their older sibling's delinquent behavior as a means to achieve status themselves. Likewise, girls who viewed their older brothers as less popular may have viewed brothers' behavior as an unsuccessful means to attain popularity and therefore refrained from engaging in similar delinquent behavior.

Previous research also suggests that younger sisters are at an increased risk for delinquency due to their access to older males (Caspi, Lynam, Moffitt, & Silva, 1993). Therefore, to further understand the interaction effect for target girls with older brothers, we examined whether girls with more popular older brothers spent more time with their brothers than did those with less popular older brothers. Time spent together was considered a proxy for access to the older brother's peer group. Girls with more popular older brothers spent no more time with their brothers than girls with less popular older brothers ( $t[157] = .72, p > .05$ ). Thus, preliminary evidence suggests that girls' access to older boys via their older brothers does not explain stronger delinquency concordance for girls with more popular older brothers. However, additional and more direct measures of inclusion within the older brothers peer group are needed to test the access hypothesis.

In sum, older sisters' popularity directly limited delinquent behavior for girls, whereas older brothers' popularity moderated delinquency concordance for girls. In contrast, perceptions of popularity did not predict delinquency for boys, nor did it moderate the association between target boys' delinquency and their older siblings' delinquency. Taken together, these results suggest that perceptions of popularity are especially salient for girls and may explain some of the previous discrepancies in sibling delinquency concordance.

#### *Limitations and Future Directions*

While this study contributes to our knowledge of perceptions of sibling popularity and delinquency, there are some limitations. First, this study utilized a community sample from rural Iowa with low to moderate levels of delinquency. While it is unclear if the results from this study apply to more diverse samples or those from other geographic locations, other findings using this sample have been replicated in other studies with more diverse participants (Lorenz, Hraba, & Pechacova, 2001; Parke et al., 2004; Solantaus, Leinonen, & Punamäki, 2004).

The age difference between siblings could influence important social factors contributing to perceptions of popularity (e.g., attend the same school, accurate knowledge of older sibling's peer status). Interestingly, we did find an association between perceptions of popularity and age difference of siblings: in closer-age siblings, younger siblings viewed the older sibling as being more popular. In addition, we did not have an objective measure of popularity of the older sibling, as would be given by sociometric or peer reports of popularity. However, for our purposes, the perception of the older siblings' popularity by the target is possibly a more useful

measure given social learning theory and the decision to mimic behaviors of the older sibling based on rewards of the perceived social status.

In addition, we did not have a measure of how much the target adolescents' value popularity. However, it is likely that the inclusion of such a measure would have strengthened our findings such that the delinquency concordance would have been particularly strong for younger siblings who both value popularity and view their older sibling to be popular.

Finally, although examining the gender of younger sibling  $\times$  gender of older sibling  $\times$  older sibling delinquency  $\times$  perceptions of popularity four-way interaction only explained a small but significant portion of the variance, it represents an aspect of sibling concordance for delinquency that has not been previously examined.

Future research should expand these findings to include additional social processes as well as additional behavioral outcomes such as those reported by Snyder, Bank, and Buraston (2005). While many studies have examined parenting behaviors and delinquency, the inclusion of perceptions of popularity may shed additional light on the processes involved with siblings' similarity of behaviors. Also, it would be interesting to examine the role of perceptions of sibling popularity on other risky behaviors such as alcohol and tobacco use and sexual activity. A recent study by Mayeux, Sandstrom, and Cillessen (2008) has examined this at the individual level. These risky behaviors may replicate important differences based on gender and popularity.

Much of the previous research on delinquency has treated the predictors as similar for boys and girls (Rowe & Farrington, 1997). However, these findings suggest that predictors may be gender specific and highlights that girls with delinquent older brothers whom they perceive as popular may be at particular risk for delinquency. Additional research is needed to understand what components of younger siblings' perceptions of older siblings' popularity explain risk for and participation in delinquency activities. These results suggest that researchers should include perceived characteristics of older siblings, such as popularity, in future studies of sibling delinquency concordance.

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