ABSTRACT

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ABSTRACT

Though scholars recognize that peer-based risks for offending are especially robust, a handful of researchers have started to question whether the vulnerability to these risks varies across people in theoretically meaningful ways. For instance, drawing on theory and empirical research, there is reason to suspect that individuals of high and low morality are not vulnerable to deviant peer reinforcement, whereas those who exist in the "middle ground" of morality are. In this way, there may be an inverted "U" of susceptibility to deviant peer socialization according to the level of subjects' propensity for offending. The current study investigates this hypothesis using longitudinal data from the National Youth Survey. Peer reinforcement does not significantly influence the offending behavior of the high morality individuals, and is a consistent and significant predictor for medium morality offenders. For low morality offenders, however, the results are inconsistent across the models. The theoretical and methodological implications for future research on the peer-propensity interaction are discussed.

ON THE RELATIONSHIP BETWEEN PEERS AND PROPENSITY: EXAMINING
VULNERABILITY TO PEER REINFORCEMENT

By

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Chapter 1: Introduction

Delinquent peer associations consistently emerge as one of the strongest and most robust correlates of antisocial behavior, particularly among adolescents (Warr, 2002). Though some theorists have questioned whether the relationship between delinquent peers and offending is causal (Glueck & Glueck, 1950; Gottfredson & Hirschi, 1990; Hirschi, 1969; Sampson & Laub, 1993), empirical work has found that delinquent peers continue to hold a strong influence on antisocial behavior even after controlling for variables that are hypothesized to render the relationship spurious (Kandel, 1978; Matsueda & Anderson, 1998; McGloin & Shermer, 2009; Thornberry et al., 1994). These studies have shown that delinquent peers, across age groups, play a pivotal and influential role in promoting a broad range of antisocial behaviors, including risky sexual behavior (Biglan et al., 1990; Romer et al., 1984), substance use (Curran, Stice & Chassin, 1997; Kandel, 1978), property crime (Agnew, 1991; Matsueda & Anderson, 1998), and violent offending (Conway & McCord, 2002; McGloin & Piquero, 2009). Moreover, peer relations have also been shown to account for the relationship between delinquency and other known correlates of offending, such as age (Warr, 1993) and gender (Heimer & DeCoster, 1999). These findings have led many criminologists to conclude that delinquent peers are one of the most influential causes of antisocial behavior (Warr, 2002).

Given what we already know about the role peers play in promoting antisocial behavior, it seems appropriate for researchers to begin to ask more nuanced questions regarding the peer-delinquency relationship. Instead of simply examining if peers play an influential role in offending, for which we appear to have a firm answer, considerable

theoretical insight may be gained by inquiring whether peers matter in different ways for different people. For instance, individual propensity may interact with peer influence in meaningful ways—an idea that has been suggested by several scholars interested in deviant behavior (Moffitt, 1993; Vitaro et al., 1997; Wikstrom, 2006; Wright et al., 2001). From this view, the relationship between peers and deviant behavior is not uniform across all people, but rather is contingent on the individual's level of antisocial propensity. Some research has been conducted that tests this idea of differential vulnerability to peer influence by assessing how individual propensity interacts with a delinquent peers measure (McGloin & Shermer, 2009; Ousey & Wilcox, 2007; Vitaro et al., 1997; Vitaro et al., 2000; Wright et al., 2001); however, the research in this area suffers from two noteworthy problems.

First, when examining the peer-propensity interaction, researchers have largely assumed the existence of a linear relationship (Haynie & Osgood, 2005; McGloin & Shermer, 2009; Wright et al., 2001; c.f. Hannon, DeFronzo & Prochnow, 2001; Ousey & Wilcox, 2007; Vitulano, Fite & Rathert, 2009). In other words, while propensity itself (e.g. morality, self-control) likely influences delinquency in a linear fashion (e.g., as morality decreases criminal offending increases), previous research has indicated that the way it interacts with other social variables is not always linear (Nagin & Paternoster, 1994; Paternoster & Pogarsky, 2009; Pogarsky, 2002). For instance, Pogarsky (2002) showed that there was an "inverted-U" of susceptibility to sanction threats based on individual propensity to offend, where individuals on the two fringes of propensity (high and low) were not deterrable but those in the middle-ground of propensity were. Although no tests have tested a similar relationship using peer influence, such findings

question whether previous research has modeled the moderating effects of propensity in a way that allows us to accurately identify those most susceptible to peer influence.

Second, extant research has not focused on a particular peer process when examining the peer-propensity relationship. To be sure, there are many different mechanisms by which peers can facilitate offending, which differ in theoretically meaningful ways. For example, peers can facilitate offending by providing offending opportunities (Osgood et al., 1996; Haynie & Osgood, 2005; Warr, 2002), and they can actively socialize individuals to offend by providing rewards, both anticipated and actual, for engaging in deviant behavior.[1] Nevertheless, most studies examining the moderating effects of propensity on peers have simply included a "delinquent peers" measure, which potentially confounds qualitatively distinct peer mechanisms of influence and clouds important variation. For example, whereas high propensity offenders may be most likely to take advantage of the deviant opportunities peers provide (Wright et al., 2001), lower propensity offenders may be most susceptible to normative peer influences (Moffitt, 1993; see also McGloin & Stickle, 2011). By simply including a "deviant peers" measure, the differential power of these peer processes can be lost.

This thesis fills this void by arguing that the learning opportunities provided by peers—specifically, peer reinforcement—will be a risk factor for some individuals, but not others. By focusing on morality as a form of individual propensity (Parsons, 1937; Wikstrom, 2006), it is hypothesized that high and low morality individuals are largely guided by their moral evaluations and will not be susceptible to the deviant reinforcement

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[1] Although peer influence has typically been discussed through learning and opportunity frameworks, this is not exhaustive of all the ways peers can influence deviance. Warr (2002), for instance, discussed several other peer processes influencing delinquency, including loyalty, status, protection, and avoidance of ridicule.

peers provide. On the other hand, it is expected that peer reinforcement will predict delinquency for individuals with medium levels of morality, as they are "neither strongly committed to crime nor unwaveringly conformist" (Nagin & Paternoster, 1994: p. 471) and are at the "tipping point" for delinquency involvement. Thus, it is suggested that there is an "inverted-U" of susceptibility to peer reinforcement based on an individual's moral regard. This study uses longitudinal data from the National Youth Survey to test this hypothesis. In the end, this study sheds light on how vulnerability to peer reinforcement varies by moral evaluations, and further details the role peers play in removing moral constraints against crime.

Chapter 2: Theoretical Rationale

Peer Reinforcement and Antisocial Behavior

Akers' (1985, 1998) social learning theory contends that deviant behavior, like all human behavior, results from the socialization processes outlined by behavioral learning theorists (Bandura, 1977). This perspective emphasizes the "reciprocal interaction between cognitive, behavioral and environmental determinants" (Bandura, 1977: p. vii) and posits that the probability that a deviant act occurs or is repeated is dependent on the past, present and anticipated future rewards and punishments that result from that behavior. Akers offers several dimensions to his social learning theory (differential association, definitions, reinforcement, imitation), however, there has been a large emphasis (both theoretically and empirically) on the extrinsic reinforcement contingencies surrounding deviance (Akers, 1985; Burgess & Akers, 1966; Capaldi et al., 1997; Patterson, 1975; Winfree et al., 1994). This reinforcement focus expects that human (and criminal) behavior is dependent on the perceptions individuals have about the consequences of their behavior. If they believe that they will be reinforced or rewarded for the behavior then they will likely act on it. Importantly, how an individual perceives the actual and anticipated consequences of their behaviors is influenced by previously learned experiences (direct and vicarious).

Although Akers' theory notes that there can be a wide range of social and nonsocial sources of reinforcement, much of the work assessing the effects of reinforcement on behavior has concentrated on peers (Dishion et al., 1996; Patterson et al., 2000; Regnerus, 2002; Winfree et al., 1994). This is not surprising given criminology's traditional focus on adolescence and the relative importance individuals

place on peers during that time period (Brown, 1990; Warr, 2002). Because adolescents place a strong emphasis on peer acceptance (level of popularity and ability to initiate and maintain friendship ties) it is hypothesized by learning theorists that they are highly sensitive to the normative influence of peers and to the level of (dis)approval they exhibit towards behaviors (Dishion et al., 1996; Warr, 2002). If an individual's peers approve of the delinquent behavior that he/she engages in, then the actions are rewarded both externally (status accruement) and cognitively (excitement) (Akers, 1998; Moffitt, 1993; Patterson, 1975). Moreover, this reinforcement increases the likelihood that the individual will view deviant behavior as a positive option when faced with similar opportunities in the future (Akers, 1985). Thus, the social learning perspective suggests that peers have a strong normative influence on individuals and promote delinquency by altering that person's perceptions of the anticipated rewards and punishments associated with deviant behavior (see Akers, 1985; 1998).

Warr (2002) has presented a slight variation of this perspective in asserting that peers influence delinquency by creating an alternative "moral universe". He suggests peer influence (i.e. reinforcement) can exempt individuals from the moral standards that generally regulate their behavior. In this way, peers assist in the facilitation of criminal acts by changing the moral code of group members that can, at times, promote antisocial behavior even if an individual generally holds moral inhibitions against the act. As an example, while an individual may generally hold strong moral reservations against vandalism, the positive stimuli reinforcing and promoting the behavior may dilute their reservations against it, and eventually, lead them to have values that are permissive or supportive of such behavior. Warr (2002) further suggests that the influence of peers on

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moral evaluations is particularly prominent during adolescence, when individuals expand their understanding of the relative nature of moral conduct (i.e., the idea that what is prohibited in one group, can be permissible, and even promoted, in another).

Extant research on the relationship between peer reinforcement and delinquency has provided support for the idea that individuals are receptive to these reinforcement contingencies. Akers & Lee (1996), for instance, found that peer reinforcement was a significant predictor of smoking behavior using a longitudinal sample of secondary students. Dewit and colleagues (2000) similarly found that peer approval for substance use predicted drug use patterns of individual respondents. Moreover, research has also found that friends' reinforcement for deviant behavior is a significant predictor of both property and violent crime (Agnew, 1991; Capaldi et al., 2001; Dishion et al., 1996; Winfree, Backstrom, & Mays, 1994; see also Krohn et al., 1996; Patterson et al., 2000; Solomon & Wahler, 1973). These studies generally concluded not just that individuals are susceptible to the extrinsic mechanisms described by learning theorists, but more specifically that they oftentimes adjust their behavior based on what they believe will lead to greater peer approval.

Despite these findings, some research has suggested that reinforcement only plays a small role in the influence peers have on offending. Warr and Stafford (1991), for instance, sought to determine whether it was peer behavior (imitation) or peer attitudes (measured as their friends' approval for deviant behaviors) that are most influential in promoting delinquency and found that the effects of peer behavior on delinquency are much larger than the effects of attitudinal transmission. In a recent meta-analysis, Pratt and colleagues (2010) concluded that reinforcement had a relatively small effect on

offending when compared to other components of social learning theory, such as differential association.[2] Nevertheless, caution must be taken before outright dismissing peer reinforcement as a strong causal factor in offending, as most of the studies testing the effects have assumed uniform susceptibility to reinforcement contingencies and have failed to consider whether individuals with varying levels of antisocial propensity are differentially vulnerable to peer reinforcement.

Peer Reinforcement and Propensity: Should Reinforcement Matter for Everyone?

In her dual taxonomy, Moffitt (1993) suggests that there is differential susceptibility to peer reinforcement based on individual propensity. She notes that the causes of delinquent behavior differs between life-course persistent and adolescent-limited offenders, with the behavior of life-course persisters (high propensity offenders) being largely driven by individual characteristics (i.e. neuropsychological deficits) and adolescent-limited (low propensity) offenders being most influenced by social factors such as peer associations. For Moffitt (1993), life-course persistent offenders possess an individual proclivity for offending and do not require social influences (e.g., peer learning, pressure) to engage in delinquent behavior. These individuals may offend with peers, but do not offend *because of them*, as their poor executive functioning predisposes them to antisocial behavior regardless of the reinforcement provided by peers (see also McGloin & Stickle, 2011).

In contrast, Moffitt (1993) believes peers have strong influence over individuals with lower levels of antisocial propensity (adolescent-limited), who imitate, and are

[2] Although differential association is a specific component of Akers' social learning theory, it incorporates nearly all of the different mechanisms of peer influence, including opportunities, modeling, reinforcement and loyalty (see Osgood et al., 1996; Warr, 2002).

subsequently reinforced for, delinquent behavior in their attempt to fill the "maturation gap" present during adolescence (Moffitt, 1993; see also Nagin & Paternoster, 1994). She is explicit that it is *learning mechanisms*, such as modeling and reinforcement, that influence the offending behavior of adolescent-limited (AL) offenders. Given that the offending behavior of adolescent-limited offenders lacks stability and cross-situational continuity, it is likely determined by reinforcement contingencies that, at the time, promote or disapprove of engaging in deviance. From this view, the learning mechanisms provided by delinquent peers have their strongest effect on nonchronic offenders, who, unlike their high propensity counterparts, maintain control over their antisocial responses and show flexibility in their offending behavior (Moffitt, 1993: p. 686; see also McGloin & Stickle, 2011).

Whereas Moffitt's theory views antisocial propensity as categorical, others view propensity as existing on a continuum (Gottfredson & Hirschi. 1990; Wilson & Hernstein, 1985). From this latter view, individuals are not simply categorized as being either high or low in antisocial propensity, but rather are continuously ordered on a spectrum of criminal proclivity that allows for much more variation when classifying an individual's risk for offending. If criminal propensity acts on a continuum, there would be meaningful differences across individuals *within* the high/low propensity groups that researchers use to categorize individuals. For instance, whereas some individuals categorized as high propensity may be particularly crime prone, others may actually possess more moderate levels of propensity. Thus, while these individuals are similarly described as having high criminal propensity, their individual criminal proclivity, and in turn the etiological processes driving their behavior, are substantively different.

If one considers propensity from this view, it is reasonable to suspect that the relationship between peers and propensity may be more complicated than a simple high/low propensity dichotomy. To be clear, whereas high propensity offenders are not vulnerable to peer reinforcement because their individual characteristics place them at a high risk of offending regardless of peer influence, it may be that low propensity offenders are so disinclined to offend that they are similarly unresponsive to these reinforcement contingencies. This view suggests that for some individuals social factors are either not necessary (in the case of high propensity offenders) or insufficient (for low propensity offenders) to overcome individual characteristics. These individuals would be largely guided by their propensity to offend, and would not be vulnerable to the social risk factors that influences an individual's decision to offend. Low propensity offenders would not even consider how their peers would react to the offending because they conform to social norms under all situations. Meanwhile, high propensity offenders hold such a high proclivity towards offending that they place little to no weight on these social consequences when faced with the opportunity to engage in a deviant act. Other individuals, however, possess more moderate levels of propensity and are at a "tipping point" for offending that makes them particularly susceptible to social stimuli. Thus, certain social influences may only be influential for the offending behavior of individuals in the "middle ground" of antisocial propensity.

Though the idea this "tipping point" hypothesis has not been tested with regard to peer influence, deterrence scholars have suggested a similar relationship when discussing how formal sanctions interact with antisocial propensity. Specifically, this research indicates individuals on the fringes (both high and low) of antisocial propensity are less

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susceptible to the threat of sanctions than are those in the middle of the propensity distribution, who are neither "strongly committed to crime nor unwaveringly conforming" (Nagin & Paternoster, 1994, p. 471). For instance, Pogarsky (2002) discussed three types of offenders when assessing susceptibility to formal sanctions: acute conformists, deterrable and incorrigible. He hypothesized that acute conformists and incorrigible individuals would largely be guided by individual characteristics such as self- and social (dis)approval to drunk driving, and that the middle-propensity offenders (deterrable) would be most susceptible to formal sanctions. Pogarsky (2002) found support for his hypothesis—specifically, that formal punishments were ineffectual for acute conformists and incorrigible individuals and, accordingly, the interaction between deterrence and individual propensity forms an "inverted-U" rather than a linear relationship.

These studies contribute considerably to our understanding of the interaction between social influences of crime and individual propensity. Given the commonalities between formal punishments and reinforcement (both are stimuli working to modify an individual's behavior), one might predict that peer reinforcement interacts with propensity in a way similar to formal sanctions. This may be particularly true when considering how peer reinforcement can remove moral restraints against crime—an individual characteristic that has been discussed in the past by theorists interested in explaining peer influence on offending, but has been largely neglected in the empirical literature (Wikstrom, 2006).

Morality is an individual-level construct at the foundation of criminal propensity (Felson, 1993; Trasler, 1993), and Parsons has even gone as far as to define criminal propensity as an absence of an "internal moral sense" (1937: 40; see also Mears et al., 1998; Hannon et al., 1999; Piquero et al., 2005). Antonaccio and Tittle (2008) found that low morality is a general predictor of misconduct when controlling for other individual characteristics associated with deviant behavior (e.g. self-control). Studies have also indicated that high morality can act as a buffer against the negative effects of other criminogenic risk factors, such as self-control and lack of formal sanctions (Paternoster & Simpson, 1996; Schoepfer & Piquero, 2006). Taken together, these findings provide empirical justification for using a measure of individual morality to assess the relationship individual propensity and social influences of crime, as well as to examine these interacting effects extending beyond a simple two group dichotomy. Indeed, many scholars have called for inquiries to carefully assess the way in which morality interacts with other risk factors for offending (Antonaccio & Tittle, 2008; Bachman et al., 1992; Paternoster & Simpson, 1996; Wikstrom, 2005), and it may be of particular theoretical interest assess this using peer reinforcement given the claims of some criminologists that peers promote offending by removing moral restraints against deviance.

Recall that Warr (2002) incorporated morality into the peer-delinquency relationship in suggesting that socializing in peer groups influences an individual's offending behavior by "exempting them, if only momentarily, from the moral code" that governs and controls their behavior outside of the group (2002: 65; see also Granovetter, 1978). In other words, the moral standards that generally regulate an individual's

behavior can be sidestepped when the reinforcement that delinquent peers provide for the antisocial behavior encourages them to skirt their moral reservations against crime. In some instances, this normative influence can lead social groups to create their own moral climate that is supportive of—or at least permissive to—antisocial behavior.

Matza (1964; see also Sykes & Matza, 1957) offers a similar explanation on the role peers play in promoting criminal behavior. In response to many subcultural theories of crime suggesting that offenders hold norms counter to those of middle-class society, Matza argued that delinquents almost always hold the same moral standards as those present in the conventional social order, and instead "drift" between conventional and criminal behavior. Given that criminal behavior is generally against the individual's moral code the process of drifting into deviance requires individual neutralizations or social influences that allow for the person to bypass his/her moral reservations. Similar to Warr (2002), Matza (1964) believes that the peer group plays a vital role in the drifting process due to the pressure individuals feel to achieve group acceptance.

If peers do affect behavior by removing an individual's moral restraints against crime, the strength of this peer effect should logically vary based on the individual's own level of morality. Specifically, peers should be most influential for those individuals who would need or are able to "sidestep" their moral codes in order to offend. From this perspective, high propensity offenders are not susceptible to the learning and reinforcement mechanisms that peers provide as their low levels of morality serve as a saturated risk for delinquency (see also McGloin & Stickle, 2011); these individuals do not need reinforcement to offend. Or, as Matza (1964) would argue, they do not need

peer reinforcement to drift into delinquency, for they are in constant hold of pro- (or permissive) delinquent values and have nothing to drift into.

It might therefore seem that lower risk individuals (i.e., those with higher levels of morality) are most susceptible to peer reinforcement. Those with higher levels of morality, by definition, hold anti-delinquent values and would require peer reinforcement to drift into delinquency and exempt them from their moral code (Matza, 1964; Warr, 2002). Given the extant research on the dynamics of morality and crime (Hannon et al., 2001; Mears et al., 1998), however, this may not be an appropriate assumption. It is possible that, while many are vulnerable to peer reinforcement and able to drift into delinquency, some individuals hold such strong moral reservations against crime that they are protected against the influence of peer reinforcement promoting offending.

Indeed, several studies have indicated that high morality protects against the adverse effects of criminogenic risk factors. Some of these studies have even shown that high moral evaluations protect against delinquent peer influence on various antisocial outcomes ranging in seriousness (Hannon et al., 2001; Mears et al., 1998). This raises the idea that individuals with high levels of morality hold such strong levels of anti-delinquent codes that they would not offend no matter the level of reinforcement being offered by peers. Thus, both individuals with high and low levels of morality may not be vulnerable to the reinforcement contingencies provided by peers, as both are guided by their moral beliefs (or lack of) regardless of the reinforcement offered by peers. Individuals low in morality, as discussed above, are already holding values conducive to delinquent behavior and do not need peer reinforcement to bypass their moral reservations.

In this way, individuals with medium levels of moral regard may be the only ones susceptible to peer reinforcement. These individuals may not only recognize the relative nature of moral codes, but also be the ones who are most likely to "drift" (Matza, 1964; Warr, 2002). Individuals in the middle-ground of moral regard may be at a "tipping point" of delinquency and conformist behavior, where social influences such as peer reinforcement can push them into delinquency. Thus, their willingness to engage in deviant behavior is contingent on the normative approval offered by delinquent peers. Put differently, persons in the middle-ground of morality may refrain from deviant behavior under most circumstances because they generally hold values that disapprove of antisocial behavior; however, the pressure to conform and fit in with peers may result in vulnerability to the anticipated social rewards offered by peers for antisocial behavior.

Granovetter (1978) has offered a similar hypothesis when discussing one's susceptibility to collective behavior—specifically, rioting. He suggests that people are rational beings seeking to maximize their utility; however, different individuals vary in the benefits that they receive from rioting. Specifically, some "radical" individuals have such a low utility threshold that they require no influence from a collective group before joining a riot, and would engage in the behavior even if no one else did as long as the opportunity presented itself. On the other side, some individuals have such a high utility threshold that they would not join a riot under any circumstances, as they perceive the benefits of rioting as small and the costs as exceptionally high. Accordingly, Granovetter (1978) suggests that it is people towards the middle of the utility threshold distribution who are most susceptible to social influences promoting rioting—their threshold for rioting makes their behavior contingent on social influences rather than their reservations

(or lack thereof) against the behavior. Although Granovetter's thesis does not directly address the role delinquent peers play in promoting antisocial behavior, it does share several similarities with the hypothesis presented here. Rioting can be seen as a form of antisocial behavior and like, deviance, Granovetter notes that it is greatly impacted by the influence of the group. Moreover, one's susceptibility to the group is conditioned by individual characteristics such that individuals on the fringes of the utility threshold are guided largely by their individual characteristics and individuals in the middle are highly influenced by the collective group. In the same way, individual who are high in morality or low in morality may be largely guided by their moral regard, whereas those in the middle ground may best most influenced by the normative influence of delinquent peers.

Although no research has explicitly assessed the functional form by which morality moderates peer reinforcement, it is possible that the relationship between peer reinforcement and morality forms an inverted-U, similar to what is hypothesized by Granovetter (1978). To review, Matza (1964) and Warr (2002) have both suggested peers facilitate behavior by removing moral restraints and allowing individuals to "drift into delinquency". However, it is reasonable to suspect that certain individuals have such high levels of moral regard that no amount of reinforcement can cause them to drift into deviance, while others are so low in morality that they will offend regardless of whether peers reinforce them or not. Accordingly, this study tests the hypothesis that individuals with medium levels of morality are susceptible to peer reinforcement, whereas those of high and low morality are not.

Chapter 3: Data and Methods

This study uses three waves of data from the National Youth Survey (1977, 1978, & 1979), a longitudinal survey of delinquency and drug use conducted in the continental United States. The survey is based on a national probability sample of 1,725 individuals aged 12-20 (they capture the time in social development at which peers are thought to be at their peak of influence).[3] There was some sample attrition as respondents moved throughout the study; however, Elliott et al. (1985) found that the representativeness of the survey was not seriously affected by the loss. At each wave of the survey, respondents were asked extensive questions about their moral beliefs and delinquent peer associations at the time of the interview, as well as the frequency and rate of delinquent behavior that occurred in the previous calendar year. Data derived from the National Youth Survey have been used extensively in the past to assess both the effects of peers and morality on deviant behavior (Agnew, 1992; Elliott et al., 1985; Hannon et al., 2001; Matsueda & Anderson, 1998; Mears et al., 1998).

A few of the behaviors used in constructing the measures lose meaning for the older respondents as they age during the three years used in this study. For instance, cheating on school exams (as well GPA as a control variable) may no longer apply to those who complete their high school education and getting drunk, although illegal, becomes relatively normalized for individuals transitioning from adolescence into adulthood. In order to assess the dynamic relationship between peer reinforcement,

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[3] These waves were selected for analysis for three primary reasons. First, a large portion of the sample did not provide responses to the survey questions regarding deviance in the 1977 wave, which would limit statistical power if testing a 1976→1977 lagged model. Second, some of the variables used in the analysis were coded differently in the 1976 wave which would reduce the consistency across all of the models. Finally, unlike the later waves in the NYS, the waves used here capture respondents at a time when peers are thought to be most salient (adolescence), and where many of the behaviors used to create the independent, dependent and moderating variables retain their conceptual significance as deviant behaviors.

morality and delinquency during adolescence, the sample is restricted to individuals who remain juveniles through the 1979 wave. Thus, individuals who are 16 years or older in the 1977 wave are excluded from the analyses. After this deletion, 1,036 of the original 1,725 cases remain.[4]

Dependent Variable

Deviance

The dependent variable for this study is a summed measure of 16 items assessing the number of times a respondent engaged in various deviant behaviors in the previous calendar year.[5] The offenses in the deviance scale ranged in severity and covered behaviors such as cheating on exams, damaging property, stealing, and hitting another person.[6] Descriptive statistics for each of the offenses used in the composite deviance measure for the 1978 and 1979 waves are presented in Appendix 1 and 2, respectively. Again, these deviance measures were summed, however, the data were highly skewed with a high proportion of zeros and a maximum of 697 offenses in the 1978 wave and 1008 offenses in the 1979 wave. Accordingly, in both waves the deviance outcomes are top-coded at the 90th percentile. This corresponds to 22 offenses in 1978 and 23 offenses in 1979. Descriptive statistics presented in Table 1 indicate that an average respondent committed 5.44 deviant acts in the 1978 wave. Comparing the mean and standard

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[4] The deleted individuals differ from the final sample in a few ways other than age. Subjects in the final sample are more likely to be non-white, report greater family attachment and parental influence, report higher levels of morality, experience less deviant reinforcement from peers, and report fewer deviant behaviors when compared to the older respondents who were removed from the sample.
[5] The dependent variable sums 16 items because NYS has separate questions into the number of times a respondent vandalized family property, school property, and other property instead of containing a general vandalism item as there is for the reinforcement and morality measures. Similarly, respondents were also asked how many times they hit a parent, teacher or other individuals in separate items.
[6] The alpha on the 16 measures was relatively low ($\alpha = .51$). Nevertheless, for conceptual clarity, the dependent variable will remain a summed count measure of deviant behavior.

deviation in the dependent variable suggest that the data are overdispersed and skewed to the right.[7]

Independent Variable

Peer Reinforcement

Akers (1985; 1998) contends that humans are sensitive to reinforcement contingencies and that peer reinforcement for deviance (both anticipated and actual) plays a key role in learning antisocial behavior. However, he notes that the effects of these normative influences can only be meaningful if the individual perceives that his peers approve of or would approve of the antisocial behavior. In the same way, peer reinforcement can only remove one's moral restraint against crime if that individual is aware of their friends' approval for the act. Accordingly, this study uses perceptual measures of peer reinforcement to examine whether perceived peer approval for deviance is moderated by morality in theoretically meaningful ways.

Peer reinforcement is an average measure assessing perceived peer approval for eight antisocial behaviors. Individuals were asked how their friends would react if they engaged in behaviors including cheating, drinking, stealing, vandalism and assault. Responses to each item were on a scale of 1 (strongly approve), 2 (approve), 3 (neither), 4 (disapprove), 5 (strongly disapprove). Each item was reverse coded so that higher

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[7] As a supplementary analysis, the dependent variable of interest was also be operationalized as a variety score in order to test the robustness of the findings (i.e., each of the deviance items will be dichotomized as 0/1+, and then summed; see Appendices 3 and 4). The results of these models are inconsistent for the low morality group. In the 1977→1978 models, peer reinforcement is not significantly related to the deviance variety score, with an effect size that is almost half of the size of the medium morality group. In the 1978→1979, however, peer reinforcement is a significant predictor of the deviance variety score for the low morality groups and the effect size is comparable to the effect size of the medium morality individuals. The results are consistent and in accordance with the primary models for the medium and high morality groups, however. Peer reinforcement is a significant predictor of the deviant behavior of the medium morality individuals, but is not for the high morality individuals, in both models.

values indicate stronger peer approval for deviance. (α = .84). After summing all items, this was then divided by eight to return the values to a four-point scale. The mean peer reinforcement score of 2.60 (*S.D.* = .573) indicates that most respondents report that their peers would disapprove of deviant behavior (see Table 1).

Table 1. Descriptive Statistics for Variables Used in Analysis

Variable	n	Mean	S. D.	Min	Max
Deviance					
1978	977	5.439	7.186	0	22
1979	938	5.498	7.527	0	23
Peer Reinforcement					
1977	979	2.600	.573	1.625	4.750
1978	969	2.798	.574	1.750	5
Morality					
1977	995	3.517	.421	1	4
1978	979	3.411	.456	1.375	4
Family Attachment					
1977	995	4.287	.856	1	5
1978	979	4.246	.852	1	5
Parental Influence					
1977	987	4.194	.951	1	5
1978	973	3.979	1.051	1	5
GPA					
1977	995	3.726	.816	1	5
1978	909	3.672	.829	1	5

Age					
1977	1036	13.514	1.115	12	15
1978	1036	14.514	1.115	13	16
Urban					
1977	995	.268	.443	0	1
1978	980	.265	.442	0	1
White	1036	.769	.421	0	1
Male	1036	.519	.500	0	1

Moderating Variable

Morality

An index of morality was constructed by averaging eight measures that assess the respondent's (dis)approval for deviant behavior. The measures ask respondents how wrong it is for someone their age to, for example, cheat on exams, damage property, steal, or hit someone without reason. The eight items ask about the same behavior covered in the peer reinforcement measure. Each item is on a scale of 1 (not wrong at all), 2 (a little bit wrong), 3 (wrong), and 4 (very wrong). Higher values on the scale indicate stronger disapproval towards deviant behavior, and thus, indicate that individuals possess higher moral regard ($\alpha = .89$). Descriptive statistics indicate a mean morality score of 3.52 (*S.D.* = .421), suggesting that most respondents report strong moral reservations against deviant behavior.[8]

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[8] A negative binomial regression analysis indicates that morality is a significant predictor of offending in both the 1977→1978 and the 1978→1979 models (see Appendices 3 and 4).

Hirschi (1969) and other control theorists (Sampson & Laub, 1993) contend that the relationship between peers and delinquency is spurious, and propose that the root cause of delinquency lies in an individual's attachment to institutions of informal social control, such as the family and school. From this view, social relationships remain a proximate cause of deviant behavior; however, the causal role of peer influence is discounted because associating with delinquent peers is an *outcome* of poor social bonds along with delinquency, and not a cause of delinquency itself. In order to appropriately assess the causal role of peer reinforcement on delinquency, bonds to family and school are controlled for in the statistical models.

Two measures tap into the respondent's attachment to parents/family. At each wave of the survey respondents were asked "How important are the things that you have done with your family been to you?", with responses ranging on a five-point scale from (1) not important, (2) not too important, (3) somewhat important, (4) pretty important and (5) very important. Further, respondents were asked "How much have your parents influenced what you have thought or done?" Again, responses range on a five-point scale from (1) very little, (2) not much, (3) some, (4) quite a bit, (5) a great deal. These items have been used in prior studies examining the relationship between family attachment and crime (Fagan & Wexler, 1987; Simons et al., 1991; see also Hirschi, 1969; Sampson & Laub, 1993). Table 1 indicates mean scores of 4.29 (*S.D.* = .903) and 4.19 (*S.D.* = .851) for importance of family activities and parental influence, respectively.

A measure of grade point average (GPA) is used to assess each respondent's commitment to school. Individuals could self-report their GPA as consisting of (1)

mostly F's, (2) mostly D's, (3) mostly C's, (4) mostly B's or (5) mostly A's. Accordingly, higher values indicate greater academic achievement and, in turn, more commitment to school (Hirschi, 1969). Descriptive statistics indicate that the mean score on this five-point scale is 3.73 (*S.E.* = .816), suggesting that respondents generally report having C to B grade point averages.

Although demographic characteristics are not direct causes of antisocial behavior, they can be markers of other causal processes influential in deviancy (Wikstrom, 2006). Age, race, gender and urbanicity, for instance, can be indicative of biological or social characteristics influencing peer selection, moral beliefs and/or delinquent behavior. Age is a continuous variable ranging from 12 to 15 years of age in the 1977 wave. Race is a dichotomous variable where a value of 1 indicates the respondent is white, and a value of 0 indicates he or she is of another race. Gender is coded as male=1 and female=0. Finally, urbanicity is a geographical code where a value of 1 indicates the respondent lives in an urban area and a value of 0 suggests he or she lives in a suburban or rural area. The data suggest that most of the respondents are, on average, 13 years of age, white (77%), male (52%), and live outside urban areas (27%) in the 1977 wave.[9]

Analytic Plan

In order to accurately test the hypothesis that peer reinforcement is most influential for individuals with medium levels of morality, the morality measure must be separated into three categories: high morals, medium morals, and low morals. A high morality individual is conceptualized as someone who consistently holds strong moral beliefs against antisocial behavior, and thus, is operationalized in this study as individuals

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[9] A correlation matrix of all of the variables for each wave is presented in Appendices 5 and 6.

who viewed all delinquent acts as "very wrong" (i.e., had a mean morality score of 4). Conversely, a person of low morals is viewed as someone who generally does not disapprove of delinquent acts. Individuals who possess an average morality score less than 3 may generally approve of antisocial behavior (i.e., with the scale used to capture moral beliefs, any value below 3 indicates that they approve of the delinquent behavior). However, on average they only approve of one of the eight deviant behaviors used in constructing the morality measure. Thus, using a cut-point of less than three may include a number of individuals who are not truly reporting low levels of morality. In order to more accurately identify these individuals, the low morality group is restricted to a more conservative average morality score of 2.75 or less. This more restrictive measure is used for several reasons. First, value of 2.75 is approximately two standard deviations below the morality mean. Second, restricting the sample to 2.75 requires that the individuals approve of at least two of the eight (25%) deviant behaviors used to create the morality measure. Taken together, the more conservative cut-point of 2.75 may better capture the low moral individuals who are of theoretical interest in this study. Therefore, individuals who possess average morality scores greater than 2.75 but less than 4 are categorized as possessing medium levels of morality.

It is noteworthy that several scholars have suggested that the relationship between peers, morality, and delinquent behavior is much more dynamic than is being tested in this paper. Thornberry (1987), for instance, argues that these relationships are reciprocal, where morality can condition the effects of peers on delinquency, but peers also play an influential role in changing one's moral beliefs. Moreover, one's peer associations can influence his/her level of delinquency, but delinquency can also have subsequent effects

on one's peer associations. Indeed, such a dynamic relationship is likely given the complexity of human behavior. Nonetheless, for empirical clarity the models presented in this paper will only test the lagged effects of peer reinforcement on deviance, conditional on morality, and will not examine the dynamic effects proposed by Thornberry (1987) and others.

Table 2. Morality Distributions for Analytic Sample.

Morality Threshold 1977	n
Low morals	51
Medium Morality	746
High Morals	145
Total n = 942	
Morality Threshold 1978	
Low Morals	85
Medium Morality	617
High Morals	109
Total n = 811*	

* The reduction in sample size is a result of non-responses in the model variables.

Frequencies indicate that 51 and 152 individuals are categorized as having low and high morals in 1977, respectively. Again, it is expected that these two groups will be guided by their moral evaluations and will not be susceptible to peer reinforcement contingencies that promote deviance. Instead, it is those with medium levels of morality that will be susceptible to such influence. The data indicate that, in the 1977 wave, 746 individuals belong to this middle group (see Table 2).

Statistical Models

Two regression models will examine whether peer reinforcement has a significant lagged effect on general deviant behavior, across the levels of morality (1977 items predicting 1978 behavior, and 1978 items predicting 1979 behavior).[10] For each sets of models, three separate regressions will be ran: one using the sample of low moral individuals, one using the sample of medium morality individuals, and one using the high moral sample. This will allow for the strength of the peer reinforcement effect to be compared across the morality categories for each of the models. Again, the purpose of this study is to test the hypothesis that morality moderates the effects of normative peer influence in meaningful ways. Specifically, the hypothesis is that those individuals with medium levels of morality are susceptible to peer reinforcement, whereas high and immoral individuals are not susceptible to such influence.

As mentioned above, the dependent variable of interest in this study is a count measure that depicts the number of deviant acts each respondent has engaged in for the 1978 and 1979 waves. The count nature of the dependent variable and the overdispersion present in the data renders OLS and Poisson models inappropriate when estimating parameters. Thus, this study utilizes negative binomial regressions in each of the models, a statistical approach well-suited for overdispersed count data (Osgood, 2000).

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[10] No cross-sectional models are run in this study due to the temporal wording of the predictors and the dependent variable. Respondents are asked about their attitudes towards deviant behaviors at the time of the survey, and the amount of delinquent behavior that engaged in the year prior to the survey. Thus, a cross-sectional model would use current moral beliefs to predict antisocial outcomes that occurred up to 12-months before.

Chapter 4: Results

Table 3. Negative Binomial. Lagged effects of peer reinforcement conditional on morality
(1977-1978)

	Low Morals	Med. Morals	High Morals
Variable	*b (S.E.)*	*b (S.E.)*	*b (S.E.)*
Peer Reinforcement	.331 (.252)	.551** (.150)	.572 (.392)
Family Attachment	.024 (.109)	-.128 (.066)	.617 (.337)
Parental Influence	.074 (.100)	-.022 (.073)	-.388 (.277)
GPA	-.124 (.119)	-.144* (.066)	-.242 (.264)
Age	-.045 (.133)	.038 (.050)	-.025 (.158)
White	.389 (.257)	.437* (.178)	.306 (.466)
Male	.303 (.304)	.210 (.109)	.559 (.392)
Urban	-.100 (.247)	.172 (.128)	-.185 (.513)
Constant	1.620 (2.179)	.323 (.823)	-.921 (2.779)
ln α	-.847 (.256)	.612 (.064)	1.275 (.183)
	n = 51	n = 746	n = 145

**$p < .01$. $p < .05$, two-tailed.

The results of the 1977→1978 and the 1978 → 1979 analyses are presented in
Tables 3 and 4, respectively. Regarding the moderating effects of morality on peer
reinforcement, the findings are slightly inconsistent across the models. First, in

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accordance with the hypothesis, peer reinforcement does not have a significant effect on the offending behavior of high moral individuals in both models when using any traditional levels of significance ($p > .10$). Notably, however, the effect size for peer reinforcement is comparable to, and slightly larger than, the medium morality group ($b = .572$) in the 1977→1978 wave. In turning to the 1978→1979 lagged model, however, we see that peer reinforcement is not a significant predictor of offending for high moral individuals and the effect size is nearly half the size as the effect size for both the medium and low morality groups ($b = .378$, $p > .10$). Taken together, it appears that the high moral regard that these individuals possess protects them from the reinforcement that peers provide that promotes antisocial behavior.

Second, the models suggest that peer reinforcement is an inconsistent predictor of deviance for individuals who have low morals. In the 1977 → 1978 model, the effect size for peer reinforcement on individuals low in morality is nearly half the size of the medium morality group and does not reach statistical significance ($b = .331$; $p > .10$), suggesting that these individuals do not require peer reinforcement to offend. In the 1978→1979 model, peer reinforcement is significantly related to offending for the low morality group, and the effect size is comparable to the effect size for the medium morality group ($b = .689$; $p < .05$). Supplemental analysis using a deviance variety score (which is presented in the appendix) confirmed these findings— among low morality individuals, peer reinforcement is not a significant predictor in the 1977→1978, but is a strong predictor in the 1978→1979 model. Accordingly, the findings here are inconclusive as to whether individuals low in morality are susceptible to the reinforcement mechanisms delinquent peers provide for engaging in antisocial behavior.

Peer reinforcement is consistent and significant predictor of antisocial behavior for the medium morality group. In both the 1977→1978 (b = 551, p < .01) and 1978→1979 (b = .695, p < .01) models the effect size of peer reinforcement is significant at the .01 level. The incident rate ratios provide some sense of the strength of this effect. In the 1977→1978 model, when holding all other variables constant, a one-unit increase in peer reinforcement is associated with a 1.734 factor increase in the expected count rate of deviant behavior. This effect is larger in the 1978→1979 model (*IRR* = 2.000), suggesting that a one-unit increase in peer reinforcement is associate with a 2.00 factor increase increase in the count rate of deviant behavior. Taken together, it appears that medium propensity offenders are consistently vulnerable to normative peer influence.

In summary, peer reinforcement has consistently significant effects on the offending behavior of medium morality individuals, however, has inconsistent effects for both the high and low morality individuals. Although the hypothesis in this study is that peer reinforcement has no effect on the offending of these latter groups, and not simply that it has less of an effect, I nevertheless conducted equality of coefficients tests to determine whether the effects of peer reinforcement were significantly different across the morality categories.[11] The results of these tests cloud the waters even further. Although the effect of peer reinforcement on delinquency was half the size of the medium morality group in the 1977→1978 low morality regression and the 1978→1979 high morality regression, these differences are not statistically significant. Accordingly, I

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[11] The equality of coefficients across the models was calculated using the following formula:

$$Z = \frac{b_1 - b_2}{\sqrt{SEb_1^2 + SEb_2^2}}.$$

cannot reject the null hypothesis that peer reinforcement has the same effect across the

different morality groups.

Table 4. Negative Binomial. Lagged effects of peer reinforcement conditional on morality
(1978-1979)

	Low Morals	Med. Morals	High Morals
Variable	b (S.E.)	b (S.E.)	b (S.E.)
Peer Reinforcement	.689* (.276)	.695** (.128)	.378 (.518)
Family Attachment	-.057 (.118)	-.203** (.092)	-.010 (.342)
Parental Influence	.184 (.112)	-.002 (.059)	-.180 (.190)
GPA	-.128 (.138)	-.101 (.073)	.075 (.259)
Age	.039 (.237)	.010 (.051)	.128 (.173)
White	.069 (.356)	.416** (.145)	-.723 (.569)
Male	-.182 (.605)	.272* (.120)	.115 (.444)
Urban	-.105 (.280)	.039 (.134)	.392 (.609)
Constant	-.377 (2.514)	.257 (.933)	-1.504 (3.512)
ln α	-.064 (.181)	.623 (.071)	1.115 (.234)
	n = 85	n = 617	n = 109

$**p < .01. * p < .05$, two-tailed.

The control variables have differential effects on antisocial behavior across the different morality groups. For the high moral group, none of the variables were significantly related to offending in either model, potentially suggesting that high moral beliefs act as a strong protector against delinquency, even for those who associate with peers who reinforce delinquency and those who are poorly attached to institutions of social control like the school and family. Other than peer reinforcement in the 1978→1979 model, no variables were significantly related to the offending behavior of the low morality individuals, as well. These findings may indicate the important role that morality plays in deviance, both as a protective and as a risk factor (Wikstrom, 2006), but one should also acknowledge that the low morality group does not contain many people and power may therefore be an issue.

Thus, similar to peer reinforcement, the control variables have the most consistent effects on the medium morality group. In each of the models one of the bonding variables was significantly related to offending for the medium morality group. In the 1977→1978 model, individuals who reported higher GPAs engaged in significantly fewer antisocial acts ($b = -.144$, $p < .05$), and in the 1978→1979 model individuals who reported stronger attachment to their family engaged in less delinquent acts for the medium morality individuals ($b = -.203$, $p < .01$). Being white is significantly related to offending for medium morality individuals in both the 1977→1978 ($b = .437$, $p < .05$) and the 1978→1979 ($b = .416$, $p < .01$) models, suggesting that whites with medium levels of morality engage in significantly more antisocial behaviors than nonwhites. No other

variables are significantly related to the offending behavior of individuals in the medium morality groups.[12]

Chapter 5: Discussion and Conclusion

Delinquent peers are one of the strongest predictors of antisocial behavior (Anderson, 1999; Matsueda & Anderson, 1998; McGloin & Shermer, 2009; Shaw & McKay, 1931; Younts, 2008), and some scholars have even suggested that they are the most influential and important cause of delinquency (Warr, 2002). Still, like other risk factors for offending (i.e., sanction threats), individuals may be differentially vulnerable to the influence peers have on offending. To be sure, some individuals may be particularly susceptible to their peers in a way that much of their deviance is contingent on the approval that their friends display towards antisocial behavior. Other individuals, however, may offend whether peers reinforce the behavior or not, or they may possess individual characteristics that protect them from the adverse effects of peer influence. Put simply, the influence that peers have on offending may not be uniform across all individuals, but instead could be moderated by individual characteristics in meaningful ways.

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[12] An alternative explanation is that the models testing these relationships lack the sample size and statistical power to identify the effects. The issue of statistical power may be particularly problematic in the 1977→1978 model, given the small sample size, however, it is less of an issue in the 1978→1979 model given the n = 85. Still, to test the power issue, the low morality group is extended to include any respondents who possess an average morality score of less than three, which increases the sample size (and the statistical power) for the models. The results from these models, presented in Appendices 9 and 10, indicate that peer reinforcement is a statistically significant predictor of deviant behavior. This could be a result of increased statistical power, or it could be caused by the supplementary models now including individuals who do not actually possess low morality, and are instead capturing "middle ground" individuals as described above. Caution should be taken before concluding that peers do not matter for low morality individuals, and replication of this study with greater statistical power is encouraged.

In this thesis, it was hypothesized that learning mechanisms—specifically peer reinforcement—would only influence the offending behavior of individuals who are in the middle-ground of antisocial propensity. The rationale behind this hypothesis is that for individuals who are high in morality or possess low levels of morality, peer reinforcement is either insufficient or unnecessary to facilitate offending. The results of the analysis are inconclusive with regard to this hypothesis. As hypothesized, peer reinforcement did not have a statistically significant relationship with the offending of individuals of high morality. This suggests that peer reinforcement is inadequate to remove these individuals' moral restraints against crime, and further may indicate that the behavior of these individuals is guided largely by their high levels of moral regard. Nevertheless, the results of an equality of coefficients test indicates that the slopes were not significantly different from the other morality groups, which raises important questions.

Peer reinforcement shows consistent effects on the deviant behavior of individuals in the middle ground of morality. Nagin and Paternoster (1994) have described these individuals as being neither strongly committed to crime nor unwaveringly conformist (p. 471), and thus are susceptible to social influences of crime. In other words, these individuals are at a "tipping point" (Granovetter, 1978) for offending, and their behavior is highly contingent on the anticipated and actual rewards peers provide for engaging in antisocial behavior. Indeed, the results of this study support this, finding strong and significant effects of peer reinforcement on delinquency for medium morality individuals across all statistical models.

The results regarding the role of peer reinforcement on the deviance of low morality individuals were inconsistent. The finding that the relationship between peer reinforcement and offending was weak and non-significant in one model, but strong and significant in the other raises important questions regarding the role that peer reinforcement plays in the offending behavior of low morality individuals, and high propensity offenders, more generally. A key thesis presented here, as well as in other prominent theories (Moffitt, 1993), is that particularly crime prone individuals do not require normative peer influence to offend. The attempts to address this issue did not yield any conclusive results—we cannot say with any certainty that peer reinforcement does or does not play a meaningful role in the offending decision of high propensity offenders. Whether the observed relationships here are a result of the sample and relatively liberal categorization of low morality offenders, or the use of morality as a measure of propensity remains unclear, and future research should seek to clarify the relationship further.

Nevertheless, these results and theoretical framework have several implications. First, the results suggest that delinquent peers, one of the most robust risk factors in offending for adolescents (Warr, 2002), may potentially not matter for everyone. Akers (1998) and other learning theorists have highlighted the important socializing role peers play in promoting antisocial behavior, and have suggested that differential reinforcement is the primary cause of delinquency, particularly during adolescence (Akers, 1998; Warr, 2002). The findings in this study, however, may suggest that peers may only play a strong and consistent role in offending for *some* individuals. Of course, the results of this study were inconsistent, and underscore the need for more research to shed light on this subject

on the question of differential vulnerability to peer reinforcement. Indeed, given the salient role peers play in promoting antisocial behavior, there is a need for criminologists to replicate this study and assess not whether peers matter, but whether they matter differently for different people.

When assessing this idea of differential vulnerability, it may prove useful to utilize measures of morality that capture the complexity of individual beliefs. To be clear, the individual morality measures used in this study were four-point Likert scales, and thus, did not allow for much variability across individuals. It is difficult to gather an accurate assessment of an individual's true attitudes toward deviant behavior when limiting the responses to four concrete options. Although this study moved beyond simple dichotomies of propensity, it is likely that the level of antisocial propensity is more nuanced than presented in the current study. Indeed, the inability to more accurately distinguish individuals' moral beliefs towards deviant behavior may be at least partially responsible for the inconsistencies found in this study. Further, while using morality as a measure of antisocial propensity made theoretical sense given the hypotheses of Matza and Warr, other forms of propensity may interact differently with peer reinforcement, and should be examined before reaching firm conclusions on how peer reinforcement affects individuals of varying antisocial propensities (e.g., neuropsychological deficits, self-control).

Criminologists should also recognize some potential complications when testing the idea of differential vulnerability to peer influence. First, while the sample used here was restricted to individuals who remained juveniles throughout all three waves of the analysis, the influence that peers have on offending may differ for adults, or even to

younger children at an earlier stage of the developmental process. The relative importance that individuals place on certain institutions (e.g., parents, schools, peers, marriage) changes over the life-course, and the strength that each of these institutions has on an individual's behavior may depend on the location in the developmental process (Sampson & Laub, 1993; Thornberry, 1987). Moreover, as mentioned above, there are most likely reciprocal effects in the relationships between peers, morality and deviance. For instance, while the current study indicates that morality conditions the effects of peers, previous research has also suggested that peers can shape one's moral beliefs (Thornberry et al., 1994). In this way, peers and morality interact such that peers can shape one's moral regard and one's morality can moderate peer influence. Some criminological theories allow for such interactional effects (see Thornberry, 1987), and researchers are encouraged to more carefully examine these dynamic relationships in the future.

Second, there are numerous mechanisms by which peers can influence behavior, many of which are qualitatively different from peer reinforcement. Indeed, one caveat of the current analysis is that it focused exclusively on peer reinforcement. Although the social learning perspective has placed a particularly strong emphasis on reinforcement contingencies in explaining criminal behavior, there are numerous other mechanisms by which peers can influence offending. Thus, in the grand scheme, peers may in fact "matter" for everyone, but *why* they matter may differ across individuals (McGloin & Stickle, 2011). In other words, peers may hold influence over the offending behavior of individuals of high or low propensity through mechanisms other than peer reinforcement. Wright and colleagues (2001), for instance, have argued that peers have their strongest

effect on individuals with the highest level of criminal propensity, not because they are susceptible to the learning mechanisms of peer influence, but rather because they take advantage of the criminal opportunities that delinquent peers provide (see also Osgood et al., 1996). In this way, the individuals are differentially vulnerable to the particular mechanisms of peer influence, whereby those who are most vulnerable to criminal opportunities differ from those who are most susceptible to peer socialization (McGloin & Stickle, 2011).

The idea of differential vulnerability based on propensity and peer mechanism(s) also offers insight into the role that peer reinforcement plays in offending. Social learning theory has had to confront an empirical literature finding mixed and oftentimes weak effects for peer reinforcement. Pratt and colleagues' (2010) recent meta-analysis found that reinforcement had a relatively small effect on offending when compared to other social learning variables, suggesting that peer reinforcement may only play a minor role in promoting antisocial behavior (see also Warr & Stafford, 1991). The assumption of uniform susceptibility to peer reinforcement may have undermined the impact that it has on offending, and a closer examination of those who are vulnerable to peer reinforcement should precede an outright dismissal of peer reinforcement as an important variable in offending. Indeed, it may be that peer reinforcement does play an important role in promoting delinquency, but the strength of that effect varies based on individual propensity towards offending.

Future researchers are encouraged to address these concerns and to add more clarity to the peer-propensity interaction. First, by testing whether the differential vulnerability to peer reinforcement observed in this study using a juvenile sample applies

when using children and adult samples. Researchers should also determine if peer reinforcement interacts with other forms of propensity in similar ways. For instance, self-control is one of the strongest predictors of offending (Pratt & Cullen, 2000). Although one might assume that peer reinforcement has its strongest effects on those with medium levels of self-control, the issue remains an empirical question that can shed further light on the relationship between peers and propensity. Third, future researchers are encouraged to examine how other peer mechanisms of influence, such as opportunities, affects the offending behavior of individuals of varying antisocial propensities. By explicating the particular mechanism of peer influence, researchers can shed considerable theoretical insight on the processes driving the peer-delinquency relationship. Finally, given the findings in this study, there is a clear need for future research to add clarity to the relationship between normative peer influence and low morality individuals.

In the end, this study moved beyond simple assessments of whether peers matter and inquired whether peers matter differently for different people. Individual characteristics (such as morality) and peers play an important etiological role in offending, but whether these individual characteristics moderate peer influence in meaningful ways has been relatively neglected. This relationship between peers and propensity become even more complicated when one considers McGloin and Stickle's (2011) recent idea that individuals who are most vulnerable to the criminogenic opportunities that peers provide may differ from those who are susceptible to peer socialization effects. This highlights the importance of explicating qualitatively distinct mechanisms of peer influence when testing peer-propensity interactions. To that end, the theoretical framework and subsequent findings contributes to the fields' growing

understanding of peer influence and delinquency: susceptibility to peer reinforcement is not uniform across all individuals.

Appendices

Appendix 1. Descriptive Statistics for Deviant Behaviors (1978)

	n	Mean	S.D.	Min	Max
Damage Family Property	980	.507	2.908	0	52
Damage School Property	980	.302	1.513	0	30
Damage Other Property	980	.342	1.118	0	12
Auto Theft	980	.013	.189	0	5
Break In	980	.039	.422	0	10
Theft > $50	979	.051	.461	0	10
Theft < $5	979	.669	4.985	0	100
Other Theft	979	.209	2.194	0	50
Attack Others	980	.071	.471	0	7
Gang Fights	980	.223	1.782	0	50
Hit Teacher	980	.164	1.004	0	20
Hit Parent	980	.104	.661	0	12
Hit Student	980	3.074	19.350	0	400
Cheat	980	2.660	9.838	0	200
Get Drunk	980	1.641	10.970	0	200
Sell Hard Drugs	980	.082	1.189	0	25

Appendix 2. Descriptive Statistics for Deviant Behaviors (1979)

	n	Mean	S.D.	Min	Max
Damage Family Property	938	.238	1.072	0	15
Damage School Property	938	.332	1.496	0	20
Damage Other Property	938	.397	1.941	0	35
Auto Theft	938	.113	.2470	0	75
Break In	938	.091	.914	0	25
Theft > $50	938	.181	2.622	0	60
Theft < $5	938	1.016	9.836	0	250
Other Theft	938	.324	2.594	0	50
Attach Others	938	.241	3.533	0	104
Gang Fights	938	.191	.864	0	12
Hit Teacher	938	.162	.812	0	12
Hit Parent	938	3.657	1.189	0	30
Hit Student	980	3.074	38.672	0	999
Cheat	938	2.688	8.681	0	100
Get Drunk	938	2.578	12.227	0	200
Sell Hard Drugs	938	.435	9.946	0	300

Appendix 3. Negative Binomial. Lagged effects of peer reinforcement conditional on morality (1977-1978): Deviance Variety Score.

Variable	Low Morals b (S.E.)	Med. Morals b (S.E.)	High Morals b (S.E.)
Peer Reinforcement	.275 (.220)	.546** (.081)	.431 (.259)
Family Attachment	-.041 (.470)	-.087 (.048)	.515* (.239)
Parental Influence	-.351 (.097)	-.032 (.044)	-.245 (.172)
GPA	-.088 (.098)	-.230** (.049)	-.124 (.180)
Age	-.097 (.098)	-.037 (.036)	-.044 (.116)
White	.044 (1.041)	.357** (.102)	.166 (.329)
Male	.503 (.167)	.282 (.080)	.395 (.271)
Urban	- .015 (.211)	.115 (.090)	.241 (.321)
Constant	2.113 (1.959)	.549 (.599)	-1.740 (1.996)
ln α	-1.859 (.549)	-.624 (.118)	.076 (.327)
	n = 51	n = 746	n = 145

**$p < .01$. $p < .05$, two-tailed.

Appendix 4. Negative Binomial. Lagged effects of peer reinforcement conditional on morality (1978-1979): Deviance Variety Score.

Variable	Low Morals	Med. Morals	High Morals
	b (*S.E.*)	*b* (*S.E.*)	*b* (*S.E.*)
Peer Reinforcement	.577*	.590**	.388
	(.239)	(.090)	(.346)
Family Attachment	-.148	-.099	.195
	(.102)	(.053)	(.267)
Parental Influence	.137	.006	.016
	(.099)	(.044)	(.163)
GPA	.020	-.006	.048
	(.124)	(.051)	(.203)
Age	-.043	-.058	-.064
	(.113)	(.039)	(.143)
White	.031	.176	-.723
	(.314)	(.109)	(.393)
Male	.055	.512**	.315
	(.248)	(.088)	(.328)
Urban	.054	.075	.334
	(.244)	(.097)	(.408)
Constant	-.186	-.326	-1.162
	(2.193)	(.695)	(2.695)
ln α	-.576	-.686	.131
	(.241)	(.137)	(.371)
	n = 85	n = 617	n = 109

**$p < .01$. $p < .05$, two-tailed.

Appendix 5. Negative Binomial. Lagged effects of morality on deviance (1977-1978).

Variable	*b*	*S.E.*
Morality	-.067*	.027
Peer Reinforcement	.844**	.149
Family Attachment	-.034	.078
Parental Influence	-.145*	.065
GPA	-.093	.069
Age	-.010	.058
White	.648**	.156
Male	.311**	.120
Urban	.241	.143
Constant	2.192	1.385

** $p < .01$. * $p < .05$, two-tailed.

Appendix 6. Negative Binomial. Lagged effects of morality on deviance (1978-1979).

Variable	b	S.E.
Morality	-.132**	.025
Peer Reinforcement	.642**	.162
Family Attachment	-.439**	.083
Parental Influence	-.119	.072
GPA	.072	.081
Age	-.135*	.058
White	.019	.175
Male	.162	.147
Urban	.149	.158
Constant	7.800**	1.385

** $p < .01$. * $p < .05$, two-tailed.

Appendix 7. Correlation Matrix for 1977-1978 Analytic Sample

	1	2	3	4	5	6	7	8	9	10.
1. Deviance	--									
2. Peer Reinforcement	.379	--								
3. Morality	-.384	-.662	--							
4. Family Attachment	-.201	-.294	.331	--						
5. Parental Influence	-.127	-.199	.252	.369	--					
6. GPA	-.172	-.190	.148	.108	.119	--				
7. Age	.136	.248	-.295	-.081	-.014	-.049	--			
8. White	.090	-.030	-.011	-.058	-.083	.043	-.023	--		
9. Male	.162	.217	-.163	-.036	.045	-.185	.048	-.011	--	
10. Urban	.015	.040	-.022	.022	.038	.004	-.009	-.258	.017	--

Appendix 8. Correlation Matrix for 1978-1979 Analytic Sample

	1	2	3	4	5	6	7	8	9	10.
1. Deviance	--									
2. Peer Reinforcement	.403	--								
3. Morality	-.406	-.657	--							
4. Family Attachment	-.231	-.296	.363	--						
5. Parental Influence	.028	-.069	-.017	.021	--					
6. GPA	-.049	-.020	.020	.033	.185	--				
7. Age	.070	.136	-.173	-.100	.039	.024	--			
8. White	.100	-.022	-.124	-.109	-.033	.048	-.012	--		
9. Male	.135	.240	-.142	.031	.031	-.002	.056	-.010	--	
10. Urban	.022	.055	.031	-.010	.026	-.067	-.017	-.2644	.008	--

Appendix 9. Negative Binomial. Lagged effects of peer reinforcement conditional on morality (1977-1978): Cut-point at less than 3 for low morality group.

	Low Morals	Med. Morals	High Morals
Variable	*b* (*S.E.*)	*b* (*S.E.*)	*b* (*S.E.*)
Peer Reinforcement	.579*	.525**	.572
	(.236)	(.122)	(.469)
Family Attachment	-.040	-.130	-.759
	(.101)	(.068)	(.401)
Parental Influence	.014	-.020	-.535
	(.090)	(.062)	(.342)
GPA	-.211	-.134*	-.254
	(.116)	(.068)	(.311)
Age	-.107	.046	-.043
	(.143)	(.051)	(.184)
White	.164	.471**	.354
	(.237)	(.145)	(.532)
Male	.632**	.193	.502
	(.236)	(.113)	(.457)
Urban	-.188	.205	-.404
	(.220)	(.133)	(.513)
Constant	2.223	.216	-2.203
	(1.923)	(.845)	(1.216)
ln α	-.576	.643	1.505
	(.200)	(.066)	(.170)
	n = 81	n = 716	n = 145

**$p < .01$. *$p < .05$, two-tailed.

Appendix 10. Negative Binomial. Lagged effects of peer reinforcement conditional on morality (1978-1979): Cut-point at less than 3 for low morality group.

Variable	Low Morals b (S.E.)	Med. Morals b (S.E.)	High Morals b (S.E.)
Peer Reinforcement	.723** (.233)	.693** (.134)	.550 (.596)
Family Attachment	-.121 (.110)	-.195* (.080)	.198 (.374)
Parental Influence	.190 (.010)	-.015 (.062)	-.301 (.210)
GPA	-.067 (.127)	-.118 (.076)	-.081 (.293)
Age	-.117 (.110)	-.040 (.054)	.223 (.180)
White	.248 (.331)	.392** (.148)	-1.044 (.679)
Male	-.053 (.229)	.308 (.126)	.339 (.500)
Urban	-.070 (.258)	.060 (.138)	.675 (.740)
Constant	1.333 (1.933)	-.105 (.970)	-3.533 (3.784)
ln α	.132 (.146)	.328 (.074)	1.307 (.217)
	n = 126	n = 576	n = 109

**$p < .01$. $p < .05$, two-tailed.

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