

AGE-RELATED DIFFERENCES IN FRIEND SIMILARITY OF DELINQUENT  
BEHAVIOR

by

Ashley D. Richmond

A Thesis Submitted to the Faculty  
of the Charles E. Schmidt College of Science  
in Partial Fulfillment of the Requirements of the Degree of  
Master of Arts

Florida Atlantic University

Boca Raton, FL

May 2012

AGE-RELATED DIFFERENCES IN FRIEND SIMILARITY ON DELINQUENT  
BEHAVIOR

by

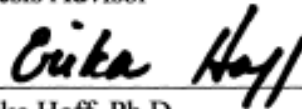
Ashley D. Richmond

This thesis was prepared under the direction of the candidate's thesis advisor, Dr. Brett Laursen, Department of Psychology, and has been approved by the members of her supervisory committee. It was submitted to the faculty of the Charles E. Schmidt College of Science and was accepted in partial fulfillment of the requirements for the degree of Master of Arts.


SUPERVISORY COMMITTEE:



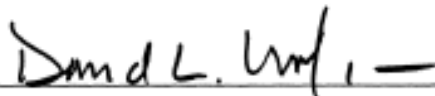
Brett Laursen, Ph.D.  
Thesis Advisor



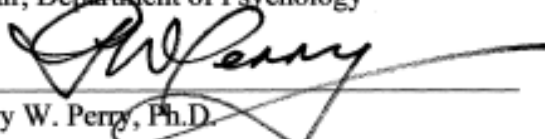
Erika Hoff, Ph.D.



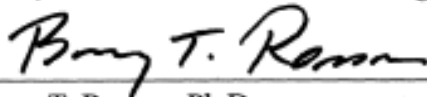
David G. Perry, Ph.D.



David L. Wolgin, Ph.D.  
Chair, Department of Psychology



Gary W. Perry, Ph.D.  
Dean, The Charles E. Schmidt College of Science



Barry T. Rosson, Ph.D.  
Dean, Graduate College

April 12, 2012  
Date

## ACKNOWLEDGEMENTS

I wish to express my sincere gratitude to Brett Laursen, Erika Hoff, Dave Perry, Donna Marion, Chris Hafen, Dawn DeLay, Håkan Stattin, Margaret Kerr, and Bill Burk for their guidance, and Tim, Cherie, Katie, and all of my family for their support.

## ABSTRACT

Author: Ashley D. Richmond  
Title: Age-Related Differences in Friend Similarity of Delinquent Behavior  
Institution: Florida Atlantic University  
Thesis Advisor: Dr. Brett Laursen  
Degree: Master of Arts  
Year: 2012

During a period of increased independence from parents, youth turn to peers for support, and consequently become more vulnerable to peer pressure (Steinberg & Silverberg, 1986). During middle adolescence, vulnerability to peer influence begins to decline (Steinberg & Monahan, 2007). Empirical research has documented this trend in vulnerability to peer pressure across adolescence, but less attention has been afforded to the age-related changes in peer similarity. To address this, age-related changes in peer similarity in delinquency across the adolescent years were examined using intraclass correlations. Moderating variables, including gender, reciprocity, and closeness, and control variables, including friendship stability and romantic partner status, were examined. Results indicated an increase in friend similarity in delinquency from 5<sup>th</sup> to 7<sup>th</sup> grade and a decrease in similarity from 7<sup>th</sup> to 10<sup>th</sup> grade. Implications of this study are discussed in terms of contribution to the field and implementation of the findings.

AGE-RELATED DIFFERENCES IN FRIEND SIMILARITY OF DELINQUENT  
BEHAVIOR

List of Tables.....	viii
List of Figures.....	vii
Introduction.....	1
Theories Addressing Changes in Adolescent Friendship Similarity.....	2
Empirical Studies of Adolescent Friend Similarity.....	6
Potential Moderators of Friendship Similarity.....	8
Reciprocity and Closeness.....	8
Gender.....	9
Additional Factors that Contribute to Friendship Similarity.....	10
Stability.....	10
Romantic Partners.....	11
Stereotype Accuracy.....	12
Age-related Changes in Selection and Socialization.....	12
Hypotheses for the Current Study.....	14
Method.....	17
Participants.....	17
Procedure.....	18
Instruments.....	19
Peer nominations.....	19

Delinquency.....	21
Plan of Analysis.....	21
Results.....	25
Descriptive Statistics.....	25
Similarity in Delinquency for Reciprocated Friends.....	25
Stereotype Accuracy.....	26
Control Variables.....	26
Selection Similarity.....	26
Similarity in Delinquency for Unilateral Friends.....	26
Stereotype Accuracy.....	27
Control Variables.....	27
Selection Similarity.....	28
Similarity in Delinquency for Unilateral Affiliates.....	28
Stereotype Accuracy.....	29
Control Variables.....	29
Selection Similarity.....	29
Comparisons of Similarity in Delinquency Across Reciprocated Friends, Unilateral Friends, and Affiliates.....	30
Discussion.....	31
Age-Related Differences in Similarity.....	31
Reciprocity, Closeness, and Gender as Moderators of Age-related Differences In Similarity.....	33
The Contributions of Friendship Stability and Romantic Partner Status to Age- Related Differences in Similarity.....	35
Selection Similarity.....	36

Study Strengths.....	37
Study Limitations.....	38
Conclusions.....	39
Appendix A.....	41
Appendix B.....	42
Appendix C.....	43
Appendix D.....	45
References.....	54

## TABLES

Table 1. Number of Friends and Affiliates by Grade.....	45
Table 2: Grade-Level Mean of Delinquency Scores of all Participants.....	46
Table 3. Similarity in Delinquency: Reciprocated Friends.....	47
Table 4. Similarity moderated by Gender, Selection Similarity: Reciprocated Friends.....	48
Table 5. Similarity in Delinquency: Unilateral Friends.....	49
Table 6. Similarity moderated by Gender, Selection Similarity: Unilateral Friends.....	50
Table 7. Similarity in Delinquency: Unilateral Affiliates.....	51
Table 8. Similarity moderated by Gender, Selection Similarity: Unilateral Affiliates.....	52



FIGURES

Figure 1. Age-related Changes in Similarity of Delinquency Across Peer Types..... 53

## INTRODUCTION

Similarity is an important feature of friendships, particularly in adolescence, because of the benefits it provides the members. Having a friend who is similar to oneself can enhance self-worth and support a healthy transition into adulthood (Sullivan, 1953). Similar friends are also beneficial for psychosocial development (Vitaro, Boivin, & Bukowski, 2009), affiliation (Furman & Wehner, 1994), and the development of independence (Moore & Boldero, 1991). Furthermore, it is presumed that having a similar friend is important for identity formation, as friends provide feedback to one another that can enhance self-concept during adolescence (Moore & Boldero, 1991). In a developmental period of identity development and declining parental involvement, similar friends provide unique benefits to youth.

Similarity arises from two well-documented processes: selection and socialization. Adolescents select as friends those with whom they are similar on certain attributes, and once they become friends, similarity increases as a result of influence (socialization) within the friendship (Lazarsfeld & Merton, 1954). It has been shown that adolescents are more similar to their friends than to other peers (Kandel, 1978a; Tolson & Urberg, 1993). This similarity has been found in personality, behaviors, attitudes, and demographic characteristics (Linden-Andersen, Markiewicz, & Doyle, 2008). Friendship similarity is particularly prominent in negative behaviors, such as delinquency

(Bronfenbrenner, 1970; Kandel, 1978b). Considerable attention has focused on similarity during the adolescent years because of concerns that youth may be particularly vulnerable to antisocial pressures from friends during a period when adult supervision wanes and identity formation, as theory suggests, is incomplete (Steinberg & Monahan, 2007; Devereux, 1970; Berndt, 1979). Several scholars have proposed age-related changes in susceptibility to peer pressure, with susceptibility increasing across early adolescence. Little attention has been given to the presumed impact these changes in susceptibility may have on actual behavior, although it is assumed that friends should grow more similar because peer pressure is a means for socialization. In order to examine similarity as it relates to peer pressure, it is necessary to determine the pattern of similarity. The purpose of this study is to examine age group differences in the similarity of delinquency among adolescent friends.

### **Theories Addressing Changes in Adolescent Friendship Similarity**

Several theories discuss the origins of age-related changes across adolescence in friendship similarity on delinquent behaviors. These theories include Moffitt's (1993) adolescent-limited deviancy, Dishion's (Dishion, Spracklen, Andrews, & Patterson, 1996) deviancy training, Hartup's (1996) reputational salience, and Steinberg's and Berndt's peer influence susceptibility (Berndt, 1979; Steinberg & Silverberg, 1986; Steinberg & Monahan, 2007). Each will be reviewed in turn.

Deviancy training refers to the bidirectional effects of deviant talk and the reactions it elicits during interactions between adolescent friends (Dishion, Spracklen, Andrews, & Patterson, 1996; Granic & Dishion, 2003). Deviancy training includes rule-

breaking talk and behavior, as well as laughter and other reinforcement that encourages deviant actions. The behavior has been found in several studies of antisocial friends interacting in a laboratory (Dishion, Andrews, & Crosby, 1995; Dishion, Patterson, Reid, & Griesler, 1994). Deviant talk is rewarded in delinquent friendships, but not in non-delinquent friendships. Among deviant friends, deviant talk leads to an increase in future problem behaviors (Granic & Dishion, 2003; Dishion, Spracklen, Andrews, & Patterson, 1996). Deviant talk peaks during the adolescent years and young adulthood (Dishion, Nelson, Winter, & Bullock, 2004). Deviant talk, therefore, may lead to an increase in the similarity of delinquent behavior across adolescence because delinquent friends mutually reinforce deviant behaviors, becoming more similar in the process.

The reputational salience hypothesis suggests that observable characteristics are more likely to determine friendship selection than internal states (Hartup, 1996). According to this theory, the more salient a characteristic is, the more likely friends will be selected on the basis of this attribute. As a consequence, friends should be more similar on behaviors than on attitudes (Tolson & Urberg, 1993). Delinquency, an externalizing problem that is manifested in observable behaviors, is quite salient and studies have found that behavioral similarity is most pronounced in delinquency, as well as aggression and drug use (Güroğlu, Lieshout, Haselager, & Scholte, 2007). As a result, friend similarity in delinquent behaviors should be quick-adjusting and easily observable, and age-related changes in the similarity will therefore be pronounced.

Adolescent-limited antisocial behavior theory hypothesizes that most individuals dabble in minor delinquency during the adolescent years (Moffitt, 1993). Consistent with

this claim are findings indicating an increase in adolescent arrests (Moffitt, 1993) and self-reported deviant behavior (Nijhof, Scholte, Overbeek, & Engels, 2010). According to Moffitt (1993), these developmental changes are the product of a maturity gap, which describes a period when adolescents feel like mature and independent beings but are not yet recognized as adults by society. During this period, adolescents mimic the behavior of those who appear to enjoy the most adult status in order to feel and appear more mature. Norm breaking behaviors increase because deviant peers appear to enjoy privileges reserved for adults. As a result, delinquency rises in early adolescence and declines in late adolescence (Moffitt, 1993), and this age-related trend may increase the similarity of friends (and non-friends) on delinquent behaviors as each experiments with minor violations of norms. Although similarity increases among friends and non-friends alike, friends will be more similar than non-friends because delinquency is typically not a solo behavior (Giordiano, Cernkovich, & Pugh, 1986).

A final theory that relates to developmental changes in friendship similarity concerns changes in susceptibility to peer influence. According to this view, youth become more vulnerable to peer pressure starting at the outset of preadolescence and continuing to just before middle adolescence, when vulnerability begins to decline (Steinberg & Silverberg, 1986; Gardner & Steinberg, 2005). This trend is thought to occur because youth turn away from their parents and focus more on peer relationships as they enter adolescence (Berndt, 1979). As independence from parents increases, youth are less exposed to adults and more exposed to age mates. One consequence may be that conformity and influence from peers increases (Steinberg & Silverberg, 1986; Berndt,

1979). When adolescents become fully autonomous and develop an identity, as presumed in theory, they become resistant to peer pressure because they are secure in their sense of self and no longer feel the need to conform to friends to gain acceptance (Blos, 1962; Steinberg & Silverberg, 1986; Costanzo & Shaw, 1966; Steinberg & Monahan, 2007). As a consequence, declining susceptibility to peer pressure should begin around ninth grade (Steinberg & Silverberg, 1986) or about 14 years old (Steinberg & Monahan, 2007). Curvilinear changes in antisocial behavior have been reported (Brown, Clasen, & Eicher, 1986; Farrington, 1986; Moffitt, 1993 ; Berndt, 1979 ). In fact, Berndt (1979 ) found that the inverted U-shaped pattern of peer pressure is especially salient for antisocial behaviors. As resistance to peer pressure increases across middle adolescence (Steinberg & Monahan, 2007), a decline in similarity among friends should follow because decreasing susceptibility to influential forces should lead to less conformity.

Taken together, these theories suggest that friendship similarity should increase during early adolescence, then decline from just before mid-adolescence to late adolescence. Because delinquency is a particularly salient behavior, changes in similarity should be especially pronounced for delinquent behaviors. Some of these changes are a product of processes that take place within the friendship, such as those arising from deviant talk and susceptibility to peer pressure, but other changes in similarity are a product of changes in the age group as a whole. According to the adolescence-limited deviancy theory, most early adolescents engage in increasing amounts of delinquent

behaviors, so similarity among all members of the cohort should increase as a product of normative experimentation.

### **Empirical Studies of Adolescent Friend Similarity**

The strongest similarity findings come from studies of demographic characteristics. Kandel (1978b) found that, when examining similarity on several of characteristics and behaviors, friends were most similar on characteristics such as age, gender, and ethnicity. Clark and Ayers (1992) found that 7<sup>th</sup> and 8<sup>th</sup> grade friends also were most similar on gender and race. Likewise, Kupersmidt, DeRosier, and Patterson (1995) found that children similar on race, gender, poverty, and sociometric status were more likely to be friends.

The next strongest findings in friend similarity, after demographic data, are those of problem behaviors (Kandel, 1978b). Fang (1997) found that friends were more similar in deviant activities, such as skipping class, running away from home, drinking, and smoking than they were on non-delinquent behaviors, such as academic achievement and activity. Similar results emerged in a study by Kandel (1978b), who found that friends were more similar in drug use, drinking and delinquency than in attitudes and school or free-time activities. However, reports are not uniform. Friend similarity on delinquency in particular ranges from  $r = 0.20$  to  $r = 0.74$  (Nijhof, Scholte, Overbeek, & Engels, 2010; Selfhout, Branje, & Meeus, 2008; Dishion, Andrews, & Crosby, 1995).

Age-related changes in friendship similarity across the adolescent years have not been well-documented, with the exception of a recent study from Burk, Van Der Vorst, Stattin, and Kerr (2012). These researchers examined similarity in intoxication frequency

between friends in three cohorts of three years each, one beginning in the 4<sup>th</sup> grade, one in 7<sup>th</sup> grade, and one in 10<sup>th</sup> grade. Specifically, the cohort of early adolescents ( $M=10$  years to  $M=12$  years) showed an increase in similarity across time, the cohort of middle adolescents showed first an increase from ages 13 to 14, then a decrease from ages 14 to 15, and the cohort of late adolescents showed a decrease in similarity across time ( $M=16$  years to  $M=18$  years).

Other studies provide indirect evidence of change in similarity in deviant behavior. Vink, Willemsen, & Boomsma (2003) found that friends are similar in smoking as measured by relative risk, which is the proportion of adolescents who smoke and have a best friend that smokes divided by those who do not smoke but have a best friend that smokes. Having a best friend who smokes increases the risk that the adolescent will smoke by a factor of 17. In this study, the relative risk (and hence the similarity) of smoking decreased starting around age 16. Another study by Larsen, Overbeek, Vermulst, Granic, and Engels (2010) examined similarity in alcohol use among Dutch adolescents and their best friends at three time points, each six months apart. The period from time 1 to time 3, therefore, represented a change from ninth to tenth grade (equivalent to 7<sup>th</sup> and 8<sup>th</sup> grade in the U.S.; Lubbers, Kuyper, & Van Der Werf, 2009), starting during the first year of secondary school. The adolescents ranged in age from 11 to 15 years ( $M=12.25$ ,  $SD=.47$ ) at the outset. Correlations indicated that similarity among friends in drinking frequency and alcohol consumption increased from time 1 to time 2, but leveled off or declined from time 2 to time 3. These studies provide some support for a decline in friend similarity in early-to mid-adolescence, but do not



give enough information to draw a conclusion about the developmental changes in friend similarity.

One longitudinal study examined changes in friend similarity in delinquency at three time points across one year, beginning in the ninth grade (seventh grade U.S. equivalent; DeKemp, Scholte, Overbeek, & Engels, 2006). Ages ranged from 11 to 14 years ( $M=12.3$ ,  $SD=.51$ ). Similarity between friends increased from time 1 to time 2, and decreased dramatically from time 2 to time 3. However, this study was not extensive enough to examine long-term age-related trends in the similarity of delinquency.

Taken together, similarity in antisocial behaviors has been found to be quite robust. Similarity in several types of antisocial behaviors, like drinking and smoking, appears to begin to decrease before mid-adolescence. However, little is known about the age-related changes in the similarity of delinquency between friends, spanning the ages 11 to 17 years.

### **Potential Moderators of Friendship Similarity**

Similarity may vary as a function of characteristics of the relationship. Several characteristics are likely candidates for moderators: Reciprocity of friendships, closeness of friendships, and gender.

**Reciprocity and Closeness.** Reciprocity is a characteristic of friendship in which both members of a dyad nominate one another as friends. Closeness refers to the strength of the tie between friends. Several studies have demonstrated differences in similarity as a function of reciprocity and closeness. For instance, Weerman and Smeenk (2005) found that participants were more similar in mild delinquency to the children they

nominated as best friends compared to their other friends. In addition, Kandel (1978b), Nijhof, Scholte, Overbeek, and Engels (2010), and Linden-Anderson, Markiewicz, and Doyle (2008) found that reciprocated friends are more similar than non-reciprocated friends in delinquency, marijuana use, and personality. Reciprocated friends have also been shown to be more similar in smoking, drinking, and personality traits than non-reciprocated friends, acquaintances, and nonfriends (Kurdek & Krile, 1982; Newcomb & Brady, 1982; Newcomb, Brady, & Hartup, 1979). Finally, Mercken, Candel, Willems and De Vries (2007) found that reciprocated friends were more influential than non-reciprocated friends, and Urberg, Değirmencioglu, and Pilgrim (1997) found that close friends were more influential than others in the peer group. Because adolescents are most susceptible to influence earlier in adolescence, similarity may increase more for reciprocated friends than unilateral friends and affiliates, and for unilateral friends than affiliates, resulting in different age-related changes for these groups. Taken together, reciprocity and closeness may play a role in age-related changes in similarity, such that reciprocated friends will be more similar overall and will become more similar in early adolescence than unilateral friends and affiliates, and that unilateral friends will be more similar overall and will become more similar in early adolescence than affiliates.

**Gender.** Although Clark and Ayers (1992) found that girls are more similar to their friends than boys on personality dimensions and achievement, most evidence suggests that girls are less similar to their friends than boys, specifically in the area of delinquency. First, Sumter, Bokhorst, Steinberg, and Westenberg (2009) and Steinberg and Silverberg (1986) found that girls are higher in autonomy and more resistant to peer

pressure, especially during mid-adolescence. In addition, growth curve analyses showed gender differences in correlations between the adolescent's delinquency intercept and the friend's delinquency intercept (Selfhout, Branje, & Meeus, 2008). The correlation between boys' delinquency intercepts was significantly higher than that of girls, meaning boys were more similar at the outset. However, there were no gender differences in the similarity of the slope of delinquency between friends. These findings suggest that gender may affect the age-related changes in friendship similarity, with girls being less similar to their friends throughout adolescence because of lower levels of similarity within the friendship and less susceptibility to peer pressure.

### **Additional Factors that Contribute to Friendship Similarity**

Several characteristics of individuals in friendships appear to be associated with friend similarity and peer influence. These characteristics may alter age-related changes in similarity on delinquent behaviors, and therefore should be controlled in analyses. Candidates for potential confounds include friendship stability, romantic partner status, and population level similarity.

**Stability.** A potential factor that may contribute to the degree of similarity between friends is the stability or continuity of the relationship. Kandel (1978a) reported that friendship stability has an effect on similarity. Focusing on behaviors of marijuana use and delinquency, Kandel found that stable friends were more similar than unstable friends. Over the course of a school year, similarity in these behaviors increased over time for stable friends but not for unstable friends. In addition, Laursen, Hafen, Kerr, and Stattin (in press) found that similarity differed among stable and unstable friends in both

delinquency and intoxication frequency. The researchers examined two combined cohorts, one of which began in 7<sup>th</sup> grade and the other of which began in 10<sup>th</sup> grade at the outset of the study. For both delinquency and intoxication frequency, similarity was greater among stable friends. Stable friends were similar and unstable friends were not (they resembled random pairs of peers). In terms of peer influence, Altermatt and Pomerantz (2003) found that stable friends were more influential than non-stable friends in measures of school grades, competence, and success. As a result, stable friends, compared to unstable friends, should display age-related changes in similarity that more closely follow the pattern of peer influence, with a significant increase in similarity in early adolescence.

**Romantic Partners.** Little is known about the possible effect that participating in a romantic relationship may have on one's similarity to his or her friend. However, it has been shown that adolescents are similar to their romantic partners on many attributes, including problem behaviors (van der Zwalaw, Scholte, Vermulst, Buitelaar, Verkes, Engels, & 2009, Giordano, Phelps, Manning, & Longmore, 2008; Bender & Losel, 1997; Caspi & Herbener, 1990; Quinton, Pickles, Maughan, & Rutter, 1993). In addition, romantic partners become more important across adolescence (Laursen & Williams, 1997). Haynie, Giordano, Manning, and Longmore (2005) reported that romantic partners exert a unique influence on their partner's delinquency, above that of friends. Taken together, these findings suggest an increase in similarity of romantic partners across adolescence. This increase in romantic partner similarity may well result in a decrease in friend similarity across adolescence, as romantic involvement increases and

as youth turn away from friends in favor of boyfriends and girlfriends. In addition, because delinquency is predominantly acted out by males (Farrington, Jolliffe, Hawkins, Catalano, Hill, & Kosterman, 2009), opposite-sex romantic relationships seemingly compete with same-sex friendships, and because romantic partners exert unique influence, friendship similarity will likely decline, especially in later years.

**Stereotype accuracy.** Stereotype accuracy (Cronbach, 1955) may lead to an apparent increase in friendship similarity. Stereotype accuracy refers to the notion that dyadic similarity arises because all or most members of the group behave in a similar or stereotypical manner. Thus, dyadic similarity may be a product of age group similarity. As a consequence, age-related changes in behavior at the population level may produce age-related changes in behavior within friendships, and studies of dyadic similarity must account for stereotype accuracy, particularly when age-related trends are considered. Stereotype accuracy is especially relevant in this study because of its relation with adolescent-limited deviance theory. Because many adolescents are increasing in delinquent behaviors, it is necessary to parse out similarity shared by many members of this age group in order to capture the similarity between friends.

### **Age-related Changes in Selection and Socialization**

Similarity among friends results from selection and socialization (Laursen, Popp, Burk, Kerr, & Stattin, 2008). Selection is the tendency to choose friends who are similar on certain attributes at the outset of a friendship, and socialization is the tendency for friends to become more similar throughout that friendship. As a result, similarity is an important contributor to friendship formation and maintenance (Kandel, Davies, &

Baydar, 1990), and both processes have been shown to play a role in friendship similarity in a variety of behaviors (Kandel, 1978a; Laursen, Popp, Burk, Kerr, & Stattin, 2008).

Socialization effects are found to exhibit age-related changes. According to a study by Monahan, Steinberg, and Cauffman (2009), socialization effects that result in similarity of anti-sociality become weaker over middle adolescence to adulthood. This pattern corresponds well with the pattern of development of peer pressure. As vulnerability to peer pressure becomes weaker in mid- to late-adolescence, socialization effects are weaker as well.

Although socialization is more difficult to parse out, selection effects can easily be obtained. Assessing selection effects, or the degree of similarity prior to the start of the relationship, can provide information on how much of the similarity among friends results from selection similarity. Selection similarity has been found to be high for delinquency, because those who are similar in deviancy tend to become friends (Snijders & Baerveldt, 2003). As a result, selection similarity should exist for friends. In addition, according to a study on similarity of intoxication frequency, Burk, Van Der Vorst, Stattin, and Kerr (2012) found that selection effects in intoxication frequency are significant throughout adolescence. However, the magnitude of selection similarity was strongest in early adolescence, and strong but somewhat weaker in late adolescence. The smallest amount of selection similarity appeared in middle adolescence (ages 13 to 15). Thus, selection effects of delinquency should be present but may decline in middle adolescence.

## **Hypotheses for the Current Study**

This study examined age-related changes in friends' similarity across the adolescent years. The data consist of self-reports of delinquency and friendship from a large community sample of Swedish adolescents. The analyses test the hypothesis that friend similarity on delinquent behavior peaks around the age of 14 and then decreases thereafter, consistent with previously-documented age-related changes in peer pressure (Gardner & Steinberg, 2005). Similarity among reciprocated friend pairs, unilateral friend pairs, and affiliate pairs was measured by calculating intraclass correlations between their delinquency scores in each grade.

Several factors that contribute to age-related changes in similarity are considered, including friendship reciprocity and closeness, gender, friendship stability, and romantic partner status. Consistent with previous findings that reciprocated friends are more similar than non-reciprocated friends and other peers (Kandel, 1978b; Nijhof, Scholte, Overbeek, & Engels, 2010; Linden-Anderson, Markiewicz, and Doyle, 2008), it was hypothesized that reciprocated friends will demonstrate the greatest similarity in self-reported delinquency. In addition, because reciprocated and close friends are more influential, (Mercken, Candel, Willems, & De Vries, 2007; Urberg, Değirmencioğlu, & Pilgrim, 1997), it was hypothesized that, compared to non-reciprocated friends and affiliates, reciprocated friends will show a greater increase in similarity of delinquency from 5<sup>th</sup> to 7<sup>th</sup> grade. Similarly, unilateral friends will show more similarity than affiliates. However, because influence is present in each relationship, similarity should peak in 7<sup>th</sup> grade for all peer types. Consistent with findings that girls are higher in

autonomy and more resistant to peer pressure (Steinberg & Silverberg, 1986), it was hypothesized that girls will be less similar to their peers than boys, and that they will not exhibit significant increases in similarity from 5<sup>th</sup> to 7<sup>th</sup> grade. Consistent with findings that stable friends exhibit more peer influence than unstable friends (Altermatt et al., 2003), it was hypothesized that controlling for stability should result in age-related changes in similarity of delinquency that increase from 5<sup>th</sup> to 7<sup>th</sup> grade and decrease from 7<sup>th</sup> to 10<sup>th</sup> grade. Lastly, consistent with findings that having a romantic partner leads to increased similarity to the romantic partner (Giordano, Phelps, Manning, & Longmore, 2008) and that boys are more delinquent than girls (Farrington, Jolliffe, Hawkins, Catalano, Hill, & Kosterman, 2009), it was hypothesized that assimilation to opposite-sex romantic partners will lead to a decrease in similarity among same-sex friends. In addition, consistent with romantic relationships becoming more important across adolescence (Laursen & Williams, 1997), the age-related changes in friend similarity will be different after controlling for romantic partner status, such that friends may become less similar in the later years.

Analyses were repeated with adjusted delinquency scores that controlled for stereotype accuracy so that dyadic similarity was not confounded with age-group or cohort similarity. It was hypothesized that similarity should be less than what was found without an adjustment for stereotype accuracy. Although similarity will decline after controlling for age group and cohort similarity, age-related changes should not differ from what is predicted, peaking in similarity in 7<sup>th</sup> grade.



Finally, selection effects were calculated to determine how much of the similarity in friends' delinquency was a product of friend selection. Selection was measured by intraclass correlations between the dyad members' delinquency scores in the previous year using only friends who were newly formed. Findings of selection similarity in delinquency suggest that selection effects would be found, and findings regarding intoxication frequency suggest that age-related changes in selection would increase across early adolescence and decrease across middle adolescence (Burk et al., 2012). It was therefore hypothesized that selection similarity will increase across early adolescence and decrease, but still be significant, across middle adolescence.

## METHOD

### Participants

Participants were drawn from the *10 to 18 Project*, a longitudinal study that began in 2002 and ended in 2007. The final sample included 3,414 participants (1,581 males and 1,833 females) from five public schools in central Sweden. Of the 3,113 students who described their nationality, 2,797 (89.85%) identified themselves as Swedish, 267 (8.58%) identified themselves as non-Swedish, and 49 (1.57%) reported that they did not know. According to parent reports, 56.6% (n = 686) of mothers who reported their working status were employed full-time, 35.2% (n = 427) were employed half-time, and 8.2% (n = 100) were not employed. In addition, 93.5% (n = 1068) of fathers who reported their working status were employed full-time, 2.6% (n = 30) were employed half-time, and 1.3% (n = 44) were not employed.

Participants included 5<sup>th</sup> through 10<sup>th</sup> graders attending schools in a medium sized Swedish city. Students in 5<sup>th</sup> and 6<sup>th</sup> grade attended primary school, students in 7<sup>th</sup> through 9<sup>th</sup> grades attended secondary school, and students in the 10<sup>th</sup> attended high school. Fifth graders ranged in age from 10 to 13 (M= 11.22; SD = .43). Sixth graders ranged in age from 11 to 14 (M= 12.21; SD = .43). Seventh graders ranged in age from 12 to 15 (M= 13.22; SD = .44). Eighth graders ranged in age from 13 to 16 (M= 14.23; SD = .45). Ninth graders ranged in age from 14 to 17 (M= 15.21; SD = .45). Tenth

graders ranged in age from 15 to 18 ( $M = 16.22$ ;  $SD = .45$ ). Reports from 11<sup>th</sup> and 12<sup>th</sup> grade were omitted because (a) many (27% to 42%) reported romantic partners, which limited friend nominations and (b) many (2% to 19% in each wave) reported friends who were not in the study, presumably because they no longer attended school.

Data were collected in five annual waves. The first wave included 2,044 students (973 boys and 1,071 girls). The second wave included 2,003 students (986 boy and 1017 girls). Of this total, 1,616 participated in the first wave of data collection. The third wave included 1,938 students (932 boy and 1,006 girls). Of this total, 1,550 participated in the second wave of data collection and 578 participated in the first and second waves of data collection. The fourth wave included 1,886 students (906 boy and 980 girls). Of this total, 1,520 participated in the third wave of data collection, 1,174 participated in the second and third waves of data collection and 871 participated in the first, second, and third waves of data collection. The fifth wave included 1,824 students (795 boy and 1,029 girls). Of this total, 1,473 participated in the fourth wave of data collection, 1,153 participated in the third and fourth waves of data collection, 834 participated in the second, third, and fourth waves of data collection, and 551 participated in the first, second, third, and fourth waves of data collection.

### **Procedure**

Letters were sent to parents to inform them of the study and to allow them the opportunity to decline their child's participation. Approximately 1% did so. Trained research assistants administered questionnaires to the participating students during regular school hours. Sessions lasted approximately one hour, and teachers were not

present. The students were informed that participation was voluntary and that their responses would remain confidential. Assent was obtained from the participants. The study was approved by the Committee for the Protection of Human Subjects in Research at Örebro University.

### **Instruments**

Participants completed questionnaires during the spring of each year.

**Peer nominations.** In wave 1, participants identified up to four important peers. In waves 2 through 5, participants identified up to three important peers. An important peer was defined as “someone you talk with, hang out with, and do things with.” These peers could not be adults. Participants labeled important peers as friends, siblings, or romantic partners. Important peers did not have to be enrolled in the same grade or attend the same school as the participant (See Appendix B).

Participants were asked to identify in-school affiliates and out-of-school affiliates. Affiliates were defined as people who hang out in a group together. Affiliates could not be adults. Affiliates did not have to be enrolled in the same grade or attend the same school as the participant. In-school affiliates were defined specifically as groups of people who hang out together in school, and out-of-school affiliates were defined specifically as groups of people who hang out together outside of school. In grades 5 and 6, participants nominated up to five in-school affiliates and up to five out-of-school affiliates. In grades 7 through 10, participants nominated up to 10 in-school affiliates and up to 10 out-of-school affiliates (See Appendix C).

*Reciprocated friends* refer to all same-sex friend nominations in which both members of the friendship nominated one another as friends. *Unilateral friends* refer to all unilateral, same-sex important peer nominations labeled as friends, excluding nominations that were reciprocated. *Unilateral affiliates* refer to all same-sex in-school and out-of-school affiliate nominations that were not nominated as friends.

At each time point, each type of friends was categorized as new or continuing. New friendships are those in which neither member nominated the other as an important peer at any time prior to the time they were categorized as new friends. Continuing friendships are those in which either member nominated the other as an important peer at any previous time point.

Romantic partners were defined as important peer nominations labeled as romantic partners. The nomination did not have to be reciprocated. In reciprocated and unreciprocated friendships, the romantic partner status of the dyad was categorized as 0 (neither peer nominated a romantic partner), 1 (one, but not both, of the peers nominated a romantic partner), or 2 (both peers nominated a romantic partner).

Stability describes whether a participant nominated the same friend or affiliate in the previous time point. Peer stability was coded as 0 (neither nominated the other in the previous wave), 1 (one, but not both, nominated the other in the previous wave), or 2 (both nominated one another in the previous wave). Friendship stability was not available from Wave 1 because this was the first year of the study, meaning that friend nominations were not collected the previous year. As a consequence, data from Wave 1 was excluded from stability analyses.

**Delinquency.** Participants in the 7<sup>th</sup> through 10<sup>th</sup> grade completed an 18-item delinquency questionnaire (See Appendix A). This measure addressed rates of deviant behaviors during the past year. The response scale ranged from 1 (no, it has not happened) to 3 (yes, several times). Participants in the 5<sup>th</sup> and 6<sup>th</sup> grades completed an abbreviated version of this questionnaire that included only 4 of the items. In order to allow for comparisons across grades, the 4-item scale was used for all participants. The correlations between the full scale and the abbreviated scale for each wave were high ( $r=.52$  to  $r=.91$ ). The 4-item scale used for all participants was reliable in each wave ( $\alpha=.67$  to  $\alpha=.76$ ).

### **Plan of Analysis**

Does peer similarity in deviant activities peak during early adolescence?

Intraclass correlations and their confidence intervals were analyzed to test the hypothesis that friends are most similar during early adolescence, approximately 7<sup>th</sup> grade (age 13 to 14), and that similarity declines thereafter. Within-dyad correlations were conducted separately for each grade. Each grade included five correlations, one from each wave. Correlations were averaged across waves to create a mean similarity score for each grade. Finally, 95% confidence intervals were calculated for the correlation in each grade. Confidence intervals for each correlation were compared to one another to examine statistically significant differences in similarity across grades. Confidence intervals that do not overlap indicate statistically significant differences. It was hypothesized that similarity in delinquency will increase from 5<sup>th</sup> to 7<sup>th</sup> grade and decline from 7<sup>th</sup> to 10<sup>th</sup>

grade, such that peers in the 5<sup>th</sup> and 10<sup>th</sup> grades would be statistically less similar than peers in the 7<sup>th</sup> grade.

Do age-related patterns of peer similarity differ for reciprocated friends, unilateral friends, and unilateral affiliates? Examination of the confidence intervals of the intraclass correlations tested the hypothesis that there were differences between friends and affiliates in developmental patterns of similarity. Within-dyad correlations were conducted separately by grade for reciprocated friends, unilateral friends, and unilateral affiliates, and 95% confidence intervals were used to identify similarity differences. It was hypothesized that, for reciprocal friends, similarity in delinquency would be high and would increase from 5<sup>th</sup> to 7<sup>th</sup> grade and decrease thereafter. Findings for unilateral friends and affiliates should follow the same changes, but similarity would be lower than that of reciprocated friends.

Do age-related patterns of peer similarity differ by gender? Examination of the confidence intervals of the intraclass correlations tested the hypothesis that developmental patterns of similarity differed between female friendship dyads and male friendship dyads. Within-dyad correlations were conducted separately by grade for female friends and male friends, and 95% confidence intervals were used to identify similarity differences. It was hypothesized that boys would be significantly more similar than girls, and, in contrast to girls, would exhibit a significant increase in similarity from 5<sup>th</sup> to 7<sup>th</sup> grade and a significant decline in similarity from 7<sup>th</sup> to 9<sup>th</sup> grade.

Supplemental analyses removed variance associated with variables that purportedly contribute to friendship similarity. In order to test the hypothesis that

stability contributes to age-related changes in similarity, partial correlations were conducted to control for this variable. Within-dyad correlations were assessed separately by grade for reciprocated friends, unilateral friends, and unilateral affiliates, controlling for the presence or absence of the same friendship in the subsequent wave. In order to test the hypothesis that romantic partner status affects age-related changes in similarity, partial correlations were conducted to control for this variable. Within-dyad correlations were assessed separately by grade for reciprocated friends, unilateral friends, and unilateral affiliates, controlling for the presence or absence of a romantic partner for either friend.

Are there age-related patterns of selection similarity in deviant activities?

Intraclass correlations tested the hypothesis that selection effects were significant across adolescence but are weaker during the period between 13 and 15 years old (Burk et al., 2012). Selection effects were calculated on new friendships. Within-dyad correlations on delinquency scores were calculated the year prior to the start of the friendship. Four correlations were calculated at each grade level, one from waves 2 through 5. Correlations could not be calculated for wave 1 data, as there were no nominations available from the previous year. Correlations were averaged across waves to create a mean similarity score for each grade. It was hypothesized that similarity in delinquency prior to friendship formation would increase from 5<sup>th</sup> to 7<sup>th</sup> grade and decrease from 7<sup>th</sup> to 9<sup>th</sup> grade.

In addition, analyses were repeated controlling for similarity at the population level (Cronbach, 1955). Correlations adjusted for stereotype accuracy represent the



similarity between friends and affiliates, after removing similarity shared by most members of the age group. Adjusted within-dyad correlations tested the hypothesis that age-related changes will diminish but not disappear after controlling for population-level similarity. In these analyses, delinquency item scores of one of the members of each dyad were adjusted by subtracting the within wave, within grade sample mean from each item in the variable. The delinquency variable then was recalculated to reflect the adjustment, and intraclass correlations were calculated again based on these adjusted variables for each grade and friendship type.

## RESULTS

### **Descriptive Statistics**

Table 1 presents the number of reciprocated friends, unilateral friends, and unilateral affiliates. Table 2 presents the mean level of delinquency for each grade. Average delinquency scores increased from 5<sup>th</sup> to 9<sup>th</sup> grade and decreased in 10<sup>th</sup> grade.

### **Similarity in Delinquency for Reciprocated Friends**

Table 3 presents the within-dyad intraclass correlations on delinquency for reciprocated friends. The intraclass correlations are significant in each grade ( $r=.14$  to  $r=.37$ ), an indication that reciprocated friends are similar to one another throughout the time period observed. In addition, as indicated by the intraclass correlations, similarity of reciprocated friends increases from 5<sup>th</sup> grade to 7<sup>th</sup> grade, and decreases thereafter. Examining the confidence intervals for each correlation shows that similarity between reciprocated friends in 5<sup>th</sup> grade ( $r=.14$ ) is significantly less than that in 7<sup>th</sup> grade ( $r=.37$ ). Furthermore, similarity in 7<sup>th</sup> grade ( $r=.37$ ) is significantly greater than that in 10<sup>th</sup> grade ( $r=.23$ ). This pattern indicates a curvilinear relationship, with similarity peaking at approximately 7<sup>th</sup> grade ( $M= 13.22$  years).

Table 4 presents the within-dyad intraclass correlations for similarity in delinquency among male and female friendship dyads. Similarity for boys peaked in 7<sup>th</sup> grade ( $r=.35$ ), but did not significantly increase from 5<sup>th</sup> to 7<sup>th</sup> grade or significantly decrease from 7<sup>th</sup> to 10<sup>th</sup> grade. Similarity for females did not exhibit a peak in 7<sup>th</sup> grade,

but a peak in 10<sup>th</sup> grade ( $r=.39$ ), and were significantly least similar in 5<sup>th</sup> grade ( $r=.04$ ) compared to any other age group. Girls were significantly more similar to one another than were boys in 10<sup>th</sup> grade.

**Stereotype accuracy.** Table 3 presents intraclass correlations after adjustments for stereotype accuracy. When population level similarity was removed, slightly smaller correlations were found at each grade, and similarity in the 5<sup>th</sup> grade was no longer statistically significant. However, the pattern of change in similarity remains the same as it was in the initial intraclass correlations, rising from grades 5 to 7 and falling from grades 7 to 10.

**Control Variables.** Table 3 presents partial intraclass correlations after controlling for romantic partner status and friendships stability. The pattern of change in similarity remains the same as it was in the initial intraclass correlations, such that similarity peaks in 7<sup>th</sup> grade.

**Selection Similarity.** Selection similarity is described in Table 4. The correlations presented at each grade represent the intraclass correlations between reciprocated friends during the previous year, before the friendship was established. Intraclass correlations are only significant in the eighth grade ( $r=.23$ ), indicating that selection is only a significant factor of similarity for reciprocated friends in the eighth grade.

### **Similarity in Delinquency for Unilateral Friends**

Table 5 presents the within-dyad intraclass correlations on delinquency for unilateral friends. The intraclass correlations are significant in each grade ( $r=.13$  to

$r=.29$ ), an indication that unilateral friends are similar to one another throughout the time period observed. In addition, as indicated by the intraclass correlations, similarity of unilateral friends increases from 5<sup>th</sup> grade to 7<sup>th</sup> grade, and decreases thereafter. Examining the confidence intervals for each correlation shows that similarity between unilateral friends in 5<sup>th</sup> grade ( $r=.13$ ) is significantly less than that in 7<sup>th</sup> grade ( $r=.29$ ). Furthermore, similarity in 7<sup>th</sup> grade ( $r=.29$ ) is significantly greater than that in 10<sup>th</sup> grade ( $r=.17$ ). This pattern indicates a curvilinear relationship, with similarity peaking at approximately 7<sup>th</sup> grade ( $M= 13.22$  years).

Table 6 presents the within-dyad intraclass correlations for similarity in delinquency among male and female friendship dyads. Similarity for boys peaked in 7<sup>th</sup> grade ( $r=.28$ ), significantly increasing from 5<sup>th</sup> to 7<sup>th</sup> grade and significantly decreasing from 7<sup>th</sup> to 10<sup>th</sup> grade. Similarity for females did not exhibit a peak in 7<sup>th</sup> grade, but a peak in 10<sup>th</sup> grade ( $r=.35$ ), and were significantly least similar in 5<sup>th</sup> grade compared to any other age group ( $r=.08$ ). Girls were significantly more similar to one another than were boys in 6<sup>th</sup> and 10<sup>th</sup> grades.

**Stereotype accuracy.** Table 5 presents intraclass correlations after adjustments for stereotype accuracy. When population level similarity was removed, slightly smaller correlations were found at each grade. However, the pattern of change in similarity remains the same as it was in the initial intraclass correlations, rising from grades 5 to 7 and falling from grades 7 to 10.

**Control Variables.** Table 5 presents partial intraclass correlations after controlling for romantic partner status and friendships stability. The pattern of change in

similarity remains the same as it was in the initial intraclass correlations, such that similarity peaks in 7<sup>th</sup> grade.

**Selection Similarity.** Selection similarity is described in Table 6. The correlations presented at each grade represent the intraclass correlations between unilateral friends during the previous year, before the friendship was established. Intraclass correlations are only significant in the eighth grade and 9<sup>th</sup> grades ( $r=.17$  and  $r=.24$ , respectively), indicating that selection is only a significant factor of similarity for unilateral friends in the eighth and ninth grades.

### **Similarity in Delinquency for Unilateral Affiliates**

Table 7 presents the similarity of delinquency for unilateral affiliates. The intraclass correlations are significant in each grade ( $r=.08$  to  $r=.23$ ), an indication that unilateral affiliates are similar to one another throughout the time period observed. In a slightly different manner compared to the similarity of reciprocated and unilateral friends, similarity of unilateral affiliates has a curvilinear pattern that peaks from 6<sup>th</sup> to 8<sup>th</sup> grade. As indicated by the intraclass correlations, similarity of affiliates is highest in grades 6 through 8 and lowest in grade 9 and 10, suggesting an increase in similarity that plateaus from early to middle adolescence before declining adolescence. Confidence intervals indicate that similarity in the 5<sup>th</sup> grade ( $r=.08$ ) is lower than that in the 6<sup>th</sup> through 8<sup>th</sup> grades ( $r=.17$  to  $r=.23$ ) and that similarity in the 10<sup>th</sup> grade ( $r=.11$ ) is also lower than that in the 6<sup>th</sup> through 8<sup>th</sup> grades ( $r=.17$  to  $r=.23$ ). The pattern is analogous to that for reciprocated and unilateral friends. The pattern indicates a curvilinear relationship, with similarity plateauing at approximately 6<sup>th</sup> to 8<sup>th</sup> grade, or ages 12 to 14.

**Stereotype accuracy.** Table 7 presents intraclass correlations after adjustments for stereotype accuracy. When population level similarity was removed, slightly but not significantly smaller correlations were found at each grade. However, the pattern of change in similarity remains the same as it was in the initial intraclass correlations, rising from grades 5 to 7 and falling from grades 7 to 10.

Table 8 presents the within-dyad intraclass correlations for similarity in delinquency among male and female friendship dyads. Similarity for both boys and girls peaked in 8<sup>th</sup> grade (boys:  $r=.20$ ; girls:  $r=.25$ ), significantly increase from 5<sup>th</sup> to 8<sup>th</sup> grade and significantly decrease from 8<sup>th</sup> to 10<sup>th</sup> grade.

**Control variables.** Table 7 presents intraclass correlations after controlling for romantic partner status and friendships stability. The pattern of change in similarity remains the same as it was in the initial intraclass correlations, such that similarity peaks from 6<sup>th</sup> to 8<sup>th</sup> grade.

**Selection similarity.** Selection similarity is described in Table 8. The correlations presented at each grade represent the intraclass correlations between unilateral affiliates during the previous year, before the friendship was established. Intraclass correlations are significant in each grade with the exception of 6<sup>th</sup> grade ( $r=.11$  to  $r=.19$ ), indicating that selection is a significant factor of similarity for unilateral affiliates in almost every grade.

## **Comparisons of Similarity in Delinquency Across Reciprocated Friends, Unilateral Friends, and Affiliates**

As illustrated in Figure 1, patterns of age-related change are similar in reciprocal and unilateral friends, increasing significantly from 5<sup>th</sup> grade to 7<sup>th</sup> seventh grade and decreasing significantly from 7<sup>th</sup> to 10<sup>th</sup> grade. Vertical lines in the figure represent 95% confidence intervals for each similarity correlation. Confidence intervals of similarity for reciprocated friends and unilateral friends overlap at each point, indicating that there were no significant differences in friendship similarity between reciprocated and unilateral friends.

Also as illustrated in Figure 1, patterns of age-related change for affiliates increases significantly from 5<sup>th</sup> grade to 6<sup>th</sup> grade, plateauing from 6<sup>th</sup> through 8<sup>th</sup> grade, and decreasing significantly thereafter. Confidence intervals show that similarity is stronger for reciprocated friends than affiliate nominations, and significantly so in 7<sup>th</sup> through 10<sup>th</sup> grades. Unilateral friends are significantly more similar than affiliates in 7<sup>th</sup> and 9<sup>th</sup> grade.

## DISCUSSION

The purpose of this study was to examine age-related changes in the patterns of similarity among friends' and affiliates' delinquency. Consistent with age-related patterns of change in peer influence, the results revealed a curvilinear trend, with similarity peaking during the 7<sup>th</sup> grade ( $M = 13.22$  years). Similar findings emerged for reciprocated friends, unilateral friends, and affiliates. The finding that similarity increases across early adolescence and decreases thereafter remained after adjusting for stereotype accuracy, romantic partner participation, and friendship stability. Selection similarity was also considered. There was no evidence of friend selection similarity in grades 5 through 7; selection effects were found only among older adolescents. Finally, there was evidence of gender difference, but not in the expected manner.

### **Age-Related Differences in Similarity**

The findings of age-related differences in similarity coincide with research on peer influence that demonstrates an analogous curvilinear pattern in the susceptibility to peer pressure (Gardner & Steinberg, 2005). Both similarity found in this study and susceptibility to peer influence found in other studies peaked just before mid-adolescence (approximately ages 13 to 14). In this study, friends were significantly less similar to one another during early adolescence and during middle adolescence than they were at the peak in 7<sup>th</sup> grade ( $M = 13.22$  years).



The theories of susceptibility to peer pressure (Berndt, 1979; Steinberg & Monahan, 2007), adolescent-limited deviance (Moffitt, 1993), deviancy training (Dishion et al., 1996), and reputational salience (Hartup, 1996) likely explain a large portion of these findings. According to the theory of susceptibility to peer pressure, youth are more vulnerable to peer pressure in early adolescence, as they gain independence from their parents and focus more on peer relationships. During this time, they conform to their peers to gain acceptance, and because of the high saliency of delinquency, the process of deviant talk, and the general increase in adolescent-limited deviance at this time, peers especially become more similar to one another on behaviors of delinquency. Once adolescents are in the process of developing a sense of self-identity, as suggested by theory, during middle adolescence, susceptibility to peer influence declines.

In addition, because adolescent-limited deviance is initiated during this time, it could be possible that similarity among friends is due simply to the similarity of all adolescents in delinquency. This possibility was ruled by adjusting the delinquency score for stereotype accuracy. Once the age and cohort similarity were controlled for, the same age-related changes emerged.

Several researchers have found this curvilinear age-related pattern of peer influence that peaks around 9<sup>th</sup> grade, or age 14 (Steinberg & Monahan, 2007). Others have found this curvilinear pattern in reports of adolescent antisocial behavior (Brown, Clasen, & Eicher, 1986; Farrington, 1986; Moffitt, 1993 ; Berndt, 1979). However, researchers had not examined the trend of friends' similarity in delinquency. Because peer pressure is a means of similarity, and delinquency is a behavior that can easily be

influenced by peers, examining the age-related changes in the similarity of delinquency was a logical next step in research.

### **Reciprocity, Closeness, and Gender as Moderators of Age-related Differences in Similarity**

The effects of friendship reciprocity and closeness on patterns of similarity were examined. In general, consistent with the theory and findings of susceptibility to peer influence, each friendship type exhibited age-related changes in similarity of delinquency that resembled the trends of peer influence, as was hypothesized. Examining each moderator individually, reciprocity did not seem to have moderating effects on similarity. Although reciprocal friends were more similar to one another than unilateral friends, the amount of similarity did not significantly differ at any age group. This finding could have several potential causes. First, because this study used confidence intervals for non-independent data, differences that normally would have been significant using correlation contrasts were not significant. In addition, according to Mercken, Candel, Willems, and de Vries (2009), unreciprocated friends exert more influence. Although this contrasts with data and models suggesting that reciprocated friends exert more influence (Urberg, Pilgrim, Değirmencioğlu, 2003; Altermatt & Pomerantz, 2003), both of these processes may be involved, making similarity of unreciprocated friends closer to that of reciprocated friends.

Closeness, on the other hand, was a significant moderator in several ways. First, although age-related changes in similarity followed the pattern of susceptibility to peer influence, there was a slight difference. Similarity in reciprocated friends and unilateral

friends peaked at 7<sup>th</sup> grade while similarity in affiliates did not peak but plateaued in 7<sup>th</sup> grade. In accord with reciprocated and unilateral friends' age-related changes of similarity, affiliate similarity in 6<sup>th</sup> through 8<sup>th</sup> grades did not significantly differ from one another, and similarity in each of those grades was significantly greater than similarity in 5<sup>th</sup> and 10<sup>th</sup> grades. However, affiliate similarity was not highest in 7<sup>th</sup> grade. Another difference between friends and affiliates was the amount of similarity observed. Affiliates were significantly less similar to one another than were either reciprocated or unilateral friends in several age groups ranging from 7<sup>th</sup> to 10<sup>th</sup> grade. All friendship groups showed comparable similarity in 5<sup>th</sup> grade, but by 7<sup>th</sup> grade, friends were significantly higher in similarity than affiliates. These differences likely result from peer influence, which occurs most in early adolescence and is stronger for close friends (Urberg, Değirmencioğlu, and Pilgrim, 1997; Berndt (1979); Steinberg & Silverberg, 1986; Steinberg & Monahan, 2007).

Gender was a significant moderator of similarity only under specific conditions. Females in the 10<sup>th</sup> grade who were friends were significantly more similar to one another than male friends in the 10<sup>th</sup> grade. Female unilateral friends were significantly more similar than male unilateral friends in 6<sup>th</sup> grade as well. There were no differences between genders in similarity of affiliates. Previous research has shown that female friends are less similar to one another, but these results do not support those findings for any age group. In addition, previous research has found that females are more resistant to peer pressure. Therefore, it was expected that female friends would not increase in similarity during early adolescence. The age-related changes in similarity of female

friends were different from the trend of vulnerability to peer pressure, as similarity increased after 5<sup>th</sup> grade but remained high from 6<sup>th</sup> to 10<sup>th</sup> grade. Boys' similarity to one another more closely resembled the trend of vulnerability to peer pressure. This suggests that females may be less influenced by peer pressure, but are more affected by other processes that create a constant high level of similarity after 5<sup>th</sup> grade. In addition, it must be unique to close relationships, as both female affiliates and male affiliates exhibited age-related changes in similarity that followed the trend of vulnerability to peer pressure.

### **The Contribution of Friendship Stability and Romantic Partner Status to Age-Related Differences in Similarity**

Factors that may contribute to age-related changes in similarity were considered, including friendship stability. It was hypothesized that, compared to original similarity scores, a comparable but flatter increase in similarity of delinquency from 5<sup>th</sup> to 7<sup>th</sup> grade and decrease from 7<sup>th</sup> to 10<sup>th</sup> grade would be seen after controlling for friendship stability because studies show stable peers are more similar (Altermatt et al., 2003). The data did not support this hypothesis. For each peer type, correlations changed only slightly when compared to original similarity correlations, and the age-related trends remained the same. Although it would be expected that age-related changes would differ because many studies show peer influence is affected by stability (Altermatt et al., 2003), some studies find no effect of stability. For instance, Urberg, Değirmencioğlu, and Pilgrim (1997), shows friendship stability does not affect peer influence of smoking and alcohol use. It appears that the closeness of the friendship at

the present time is more important in terms of similarity than lasting friendships during this age period.

The contribution that romantic partner status made to age-related differences in friend similarity was also considered. It was hypothesized that, as romantic relationships become more important across adolescence and individuals become more similar to their romantic partner, they will become less similar to their friends, particularly during late adolescence when participation in romantic relationships increase. Controlling for this variable will lead to differences in age-related changes that show a steeper decline in middle adolescence. The results did not support this hypothesis. Correlations that included a control for romantic partner status were almost identical to those without. This finding is difficult to reconcile with prior research on romantic partner influence. Romantic partners are of increasing importance across adolescence, and they become similar to one another on delinquency during the relationship (Haynie, Giordano, Manning, & Longmore, 2005). This process of assimilating to their opposite-sex romantic partners apparently does not expand the differences in delinquency between adolescents and their same-sex friends. This may be because friends are also accommodating similar romantic partners or because the composition of friends changes such that new friends resemble romantic partners.

### **Selection Similarity**

Finally, the influence of peers is an aspect of the process of socialization, which is one of the main components of similarity. Friends influence one another through peer pressure, which results in increased similarity to one another over time. However,

another source of similarity is selection, or similarity of individuals before their friendship begins. Based on research by Burk et al. (2012), it was hypothesized that selection similarity would be significant across the adolescent years, possibly increasing a bit towards middle adolescence, but would be most significant in early adolescence. This hypothesis was somewhat supported by the findings, such that there was significant selection similarity in middle adolescence, but the remaining age-related changes did not coincide. Selection similarity in this study was only significant for middle adolescents (ages 14 to 15 years). Unilateral affiliates showed significant selection effects in almost every time period. An explanation of this finding comes from the work of Jaccard, Blanton, and Dodge (2005) that examines similarity in alcohol consumption. The researchers found that, although reciprocated friends are more similar than unilateral friends, unilateral friends are more likely to change their behavior to match that of the other member.

### **Study Strengths**

A main strength of this study is the novel focus on age-related differences in similarity of delinquency between friends and peers. This focus provides information to the researchers who study similarity as well as to those who study age-related changes in susceptibility to peer pressure, and as a result, the findings advance the literature in the field examining similarity. This study is different from previous studies in that it examines age-related changes in similarity that have been presumed to exhibit parallel age-related differences in susceptibility to peer pressure, but this has not been demonstrated in delinquency prior to this study.

Another main strength is the richness of the data. All of the school-aged children in this Swedish town were included in the study. The sample was large, which is important when examining interdependent analyses, because some portions of the sample must be removed. In addition, compared to most studies that use only data on peers in the same school, this study used adolescents from all schools in the town, providing data on out-of-school friends and affiliates. This is particularly important when considering anti-social variables because research indicates that most deviant acts are committed outside of school, with non-school affiliates (Kiesner, Poulin, & Nicotra, 2003).

### **Study Limitations**

This study is not without limitations. First, important peer nominations were limited to only 3 or 4 individuals. Prinstein (2005) suggests that much can be obtained when allowing for a limitless nomination procedure. In addition to this feature of the data, the setting of the study may not be readily generalizable to other populations. The study was conducted in a medium-sized town in Sweden, which may differ in delinquency rates compared to other countries and compared to larger cities with more heterogeneous populations. As a result, the findings should be considered with attention to this aspect of the sample.

Another limitation of this study is the analyses. As a result of the inherent interdependence in this type of friendship similarity paradigm, many developmental statistical methods that require independent data, such as regression, growth curve models, and correlation contrasts, could not be used. The data could not be analyzed longitudinally, and much information was lost as a result. In addition, confidence

intervals of correlations are a relatively conservative analysis compared to correlation contrasts used with independent data. Reciprocity differences in similarity, for example, would likely be significant if the data were independent and correlation contrasts were used. In addition, Reichart & Gollob (1987) explain that determining if one correlation equals another is better answered by statistical tests (that assume independence so cannot be used) as opposed to confidence intervals. Finally, the participants contributed an uneven number of relationships, skewing results toward those with multiple friends.

### **Conclusions**

This study used intraclass correlations to examine the age-related differences in similarity of delinquency between friends and affiliates across 5<sup>th</sup> through 10<sup>th</sup> grade. Results showed that similarity peaked at approximately 7<sup>th</sup> grade for reciprocated friends, unilateral friends, and affiliates. The magnitude of similarity, but not the general pattern, differed across these relationships. Comparable patterns remained after controlling for romantic partner status and friendship stability, as well as after adjustments for stereotype accuracy. Selection was shown to be a significant contributor to the similarity between friends in later grades.

This study replicates and extends the previous work on peer influence. Knowing the age-related changes in friendship similarity is central to our understanding of the origins of youth antisocial behavior. By examining which friendship processes and which friends lead to antisocial behavior, and knowing when in development these factors affect antisocial behavior, can provide important implications for prevention and intervention of antisocial behavior. The findings suggest that some delinquency during early- and mid-



adolescence can likely be prevented with the utilization of techniques designed to minimize peer pressure in order to avoid socialization that results in similarity. In addition, this study shows that similarity in delinquency between friends begins early, before the fifth grade. As a result, it is important for problems in children's delinquency and their peers' delinquency to be discovered and resolved early, and to continue to be monitored across early and middle adolescence, when both peer pressure and similarity peak.

## APPENDIX A

### Delinquency Questionnaire

During the last year:

1. Have you taken things from a store, stand, or shop without paying?
2. Have you participated in breaking into a home, shop, stand, storage building or other building with the intention of taking things?
3. Have you taken a bicycle without permission?
4. Have you taken part in stealing something from a car

Response format:

1. No, it has not happened
2. 1 time
3. Several times

## APPENDIX B

### Friendship Nomination Form

An important peer is a very important person in one's life, somebody one talks to, spends time with, and does things with – but it cannot be one's parents or another adult. An important peer can live anywhere, does not have to be of the same age, and can be a boy or a girl. Fill in only as many VIPs as you have! Remember that it cannot be an adult.

Name your first VIP – ID (First name, last name)

Name your second VIP – ID (First name, last name)

Name your third VIP – ID (First name, last name)

*For each VIP, adolescents answered the following questions:*

What is your VIP?

Response format:

1. A Friend
2. A sibling
3. A boy/girlfriend
4. Other, who?

Where do you hang out together?

Response format:

1. In school
2. In free-time
3. Both in school and in free-time

## APPENDIX C

### Affiliate Nomination Form

In all schools there are groups of kids (at least 3 people) who hang out together (groups of friends or several people who are usually together). Below, write the groups that you know about in your school by writing the first and last names and classes on the lines below.

If you belong to a group in school, begin by writing you own name and the names of the people who belong to your group. Write names for all the groups that you are aware of (in your class and other groups in your school). Note! One person can belong to more than one group.

Your group, Group1

ID (First name, last name, class)

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

Now you should write down the groups of young people (at least 3 people) who hang out together outside of school (several people who are often together). Below, write down all groups that you know about in free time by writing people's names on the lines below.

Note! One person can belong to several groups.

If you belong to a group outside of school, begin by writing your own name and the names of the people who belong to your group. Write names for all the groups that you are aware of (in your class and other groups in your school). Note! One person can belong to more than one group.

Your group, Group1

ID (First name, last name, class)

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

## APPENDIX D

### Tables and Figures

Table 1

*Number of Friends and Affiliates by Grade*

Peer Type	Grade					
	5	6	7	8	9	10
Unilateral Affiliates	2147	2499	2980	3188	3068	3355
Unilateral Friends	2156	2298	2254	1939	1704	1533
Reciprocated Friends	584	714	865	795	753	612

Table 2

*Grade-Level Mean of Delinquency Scores of all Participants*

Grade	<i>N</i>	Delinquency <i>M</i> ( <i>SD</i> )
5	2691	1.03(.12)
6	2744	1.07(.19)
7	2824	1.13(.35)
8	2193	1.22(.52)
9	1148	1.24(.57)
10	2079	1.17(.44)

*Note.* Item scores range from 1 (no) to 3 (yes, several times).

Table 3

*Similarity in Delinquency: Reciprocated Friends*

Delinquency	Grade					
	5 <sup>a</sup>	6 <sup>b</sup>	7 <sup>c</sup>	8 <sup>d</sup>	9 <sup>e</sup>	10 <sup>f</sup>
Similarity ( <i>r</i> )	0.14*	0.30*	0.37*	0.32*	0.26*	0.23*
Confidence Interval of Similarity ( <i>r</i> )	(.06, .22)	(.23, .37)	(.31, .43)	(.26, .38)	(.19, .33)	(.15, .30)
Similarity ( <i>r</i> ) Adjusted for Stereotype Accuracy	0.08	0.26*	0.31*	0.24*	0.19*	0.17*
Confidence Interval of Similarity ( <i>r</i> ) Adjusted	(.01, .16)	(.19, .33)	(.25, .37)	(.17, .30)	(.12, .26)	(.09, .25)
Similarity ( <i>r</i> ) with Control for Romantic Partner Status	0.14*	0.31*	0.37*	0.31*	0.27*	0.25*
Confidence Interval of Similarity ( <i>r</i> ) with Control	(.06, .22)	(.24, .37)	(.31, .43)	(.25, .37)	(.20, .33)	(.18, .31)
Similarity ( <i>r</i> ) with Control for Friendship Stability	0.07	0.24*	0.34*	0.28*	0.24*	0.27*
Confidence Interval of Similarity ( <i>r</i> ) with Control for Friendship Stability	(-.03, .16)	(.16, .32)	(.27, .41)	(.20, .35)	(.16, .31)	(.19, .36)

*Note.* Romantic partner status of the dyad was categorized as 0 (neither peer nominated a romantic partner), 1 (one, but not both, of the peers nominated a romantic partner), or 2 (both peers nominated a romantic partner). Peer stability was coded as 0 (neither nominated the other in the previous wave), 1 (one, but not both, nominated the other in the previous wave), or 2 (both nominated one another in the previous wave).

<sup>a</sup>*n* = 584, <sup>b</sup>*n* = 714, <sup>c</sup>*n* = 865, <sup>d</sup>*n* = 795, <sup>e</sup>*n* = 753, <sup>f</sup>*n* = 612

\**p* < .05



Table 4

*Similarity Moderated by Gender, Selection Similarity: Reciprocated Friends*

Delinquency	Grade					
	5	6	7	8	9	10
Similarity ( $r$ ) moderated by gender						
Male	.15*	.25*	.35*	.33*	.15*	.17*
Confidence Interval of Similarity ( $r$ ) for Males	(.03, .26)	(.14, .34)	(.25, .43)	(.23, .43)	(.04, .26)	(.06, .29)
Female	.04	.32*	.28*	.27*	.25*	.39*
Confidence Interval of Similarity ( $r$ ) for Females	(-.07, .15)	(.23, .41)	(.20, .36)	(.19, .35)	(.17, .34)	(.30, .48)
Selection Similarity ( $r$ in Previous Year)	0.16	0.02	0.02	0.23*	0.12	0.17
Confidence Interval of Selection Similarity ( $r$ )	(-.02, .33)	(-.13, .17)	(-.11, .15)	(.06, .38)	(-.06, .28)	(-.03, .35)

\* $p < .05$

Table 5

*Similarity in Delinquency: Unilateral Friends*

Delinquency	Grade					
	5 <sup>a</sup>	6 <sup>b</sup>	7 <sup>c</sup>	8 <sup>d</sup>	9 <sup>e</sup>	10 <sup>f</sup>
Similarity ( <i>r</i> )	0.16*	0.24*	0.29*	0.24*	0.22*	0.17*
Confidence Interval of Similarity ( <i>r</i> )	(.12, .21)	(.20, .28)	(.25, .33)	(.20, .28)	(.18, .26)	(.12, .22)
Similarity ( <i>r</i> ) Adjusted for Stereotype Accuracy	0.10*	0.20*	0.23*	0.19*	0.17*	0.13*
Confidence Interval of Similarity ( <i>r</i> ) Adjusted	(.06, .14)	(.16, .24)	(.20, .27)	(.14, .23)	(.12, .21)	(.08, .18)
Similarity ( <i>r</i> ) with Control for Romantic Partner Status	0.15*	0.24*	0.29*	0.23*	0.22*	0.17*
Confidence Interval of Similarity ( <i>r</i> ) with Control	(.11, .19)	(.20, .28)	(.25, .33)	(.19, .27)	(.17, .26)	(.11, .22)
Similarity ( <i>r</i> ) with Control for Friendship Stability	0.10*	0.18*	0.21*	0.16*	0.18*	0.14*
Confidence Interval of Similarity ( <i>r</i> ) with Control for Friendship Stability	(.06, .14)	(.14, .22)	(.17, .25)	(.13, .21)	(.14, .23)	(.09, .19)

49

*Note.* Romantic partner status of the dyad was categorized as 0 (neither peer nominated a romantic partner), 1 (one, but not both, of the peers nominated a romantic partner), or 2 (both peers nominated a romantic partner). Peer stability was coded as 0 (neither nominated the other in the previous wave), 1 (one, but not both, nominated the other in the previous wave), or 2 (both nominated one another in the previous wave).

<sup>a</sup>*n* = 2156, <sup>b</sup>*n* = 2298, <sup>c</sup>*n* = 2254, <sup>d</sup>*n* = 1939, <sup>e</sup>*n* = 1704, <sup>f</sup>*n* = 1533

\**p* < .05

Table 6

*Similarity Moderated by Gender, Selection Similarity: Unilateral Friends*

Delinquency		Grade					
		5	6	7	8	9	10
Similarity ( <i>r</i> ) moderated by gender							
50	Male	.12*	.18*	.28*	.20*	.15*	.10*
	Confidence Interval of Similarity ( <i>r</i> ) of Males	(.07,.18)	(.12,.24)	(.23,.34)	(.14,.26)	(.08,.21)	(.03,.17)
	Female	.08*	.30*	.26*	.26*	.30*	.35*
	Confidence Interval of Similarity ( <i>r</i> ) of Females	(.02,.14)	(.25,.35)	(.20,.31)	(.20,.31)	(.24,.36)	(.28,.41)
	Selection Similarity ( <i>r</i> in Previous Year)	0.04	0.05	0.05	0.17*	0.24*	0.08
	Confidence Interval of Selection Similarity ( <i>r</i> )	(-.04,.12)	(-.02,.12)	(-.02,.12)	(.08,.26)	(.15,.33)	(-.03,.19)

\* $p < .05$

Table 7

*Similarity in Delinquency: Unilateral Affiliates*

Delinquency	Grade					
	5 <sup>a</sup>	6 <sup>b</sup>	7 <sup>c</sup>	8 <sup>d</sup>	9 <sup>e</sup>	10 <sup>f</sup>
Similarity ( <i>r</i> )	0.08*	0.21*	0.17*	0.23*	0.14*	0.11*
Confidence Interval of Similarity ( <i>r</i> )	(.04, .12)	(.17, .25)	(.14, .20)	(.20, .26)	(.11, .17)	(.08, .14)
Similarity ( <i>r</i> ) Adjusted for Stereotype Accuracy	0.06*	0.17*	0.13*	0.19*	0.10*	0.07*
51 Confidence Interval of Similarity ( <i>r</i> ) Adjusted	(.02, .10)	(.13, .21)	(.10, .17)	(.16, .22)	(.07, .13)	(.04, .10)
Similarity ( <i>r</i> ) with Control for Romantic Partner Status	0.08*	0.20*	0.17*	0.21*	0.14*	0.11*
Confidence Interval of Similarity ( <i>r</i> ) with Control	(.04, .13)	(.16, .24)	(.13, .20)	(.18, .24)	(.11, .18)	(.08, .14)
Similarity ( <i>r</i> ) with Control for Friendship Stability	0.05*	0.16*	0.17*	0.19*	0.09*	0.09*
Confidence Interval of Similarity ( <i>r</i> ) with Control for Friendship Stability	(.01, .09)	(.12, .19)	(.14, .21)	(.15, .23)	(.06, .13)	(.06, .13)

*Note.* Romantic partner status of the dyad was categorized as 0 (neither peer nominated a romantic partner), 1 (one, but not both, of the peers nominated a romantic partner), or 2 (both peers nominated a romantic partner). Peer stability was coded as 0 (neither nominated the other in the previous wave), 1 (one, but not both, nominated the other in the previous wave), or 2 (both nominated one another in the previous wave).

<sup>a</sup>*n* = 2147, <sup>b</sup>*n* = 2499, <sup>c</sup>*n* = 2980, <sup>d</sup>*n* = 3188, <sup>e</sup>*n* = 3068, <sup>f</sup>*n* = 3355

\**p* < .05

Table 8

*Similarity Moderated by Gender, Selection Similarity: Unilateral Affiliates*

Delinquency	Grade					
	5	6	7	8	9	10
Similarity ( <i>r</i> ) moderated by gender						
Male	.08*	.15*	.17*	.20*	.07*	.07*
Confidence Interval of Similarity ( <i>r</i> ) of Males	(.02,.14)	(.10,.21)	(.12,.23)	(.15,.24)	(.02,.12)	(.03,.12)
Female	.02	.16*	.15*	.25*	.15*	.10*
Confidence Interval of Similarity ( <i>r</i> ) of Females	(-.05,.07)	(.11,.22)	(.16,.23)	(.21,.28)	(.10,.19)	(.06,.15)
Selection Similarity ( <i>r</i> in Previous Year)	0.11*	0.05	0.15*	0.13*	0.19*	0.12*
Confidence Interval of Selection Similarity ( <i>r</i> )	(.06,.17)	(.01,.10)	(.11,.19)	(.09,.17)	(.14,.23)	(.06,.17)

\* $p < .05$

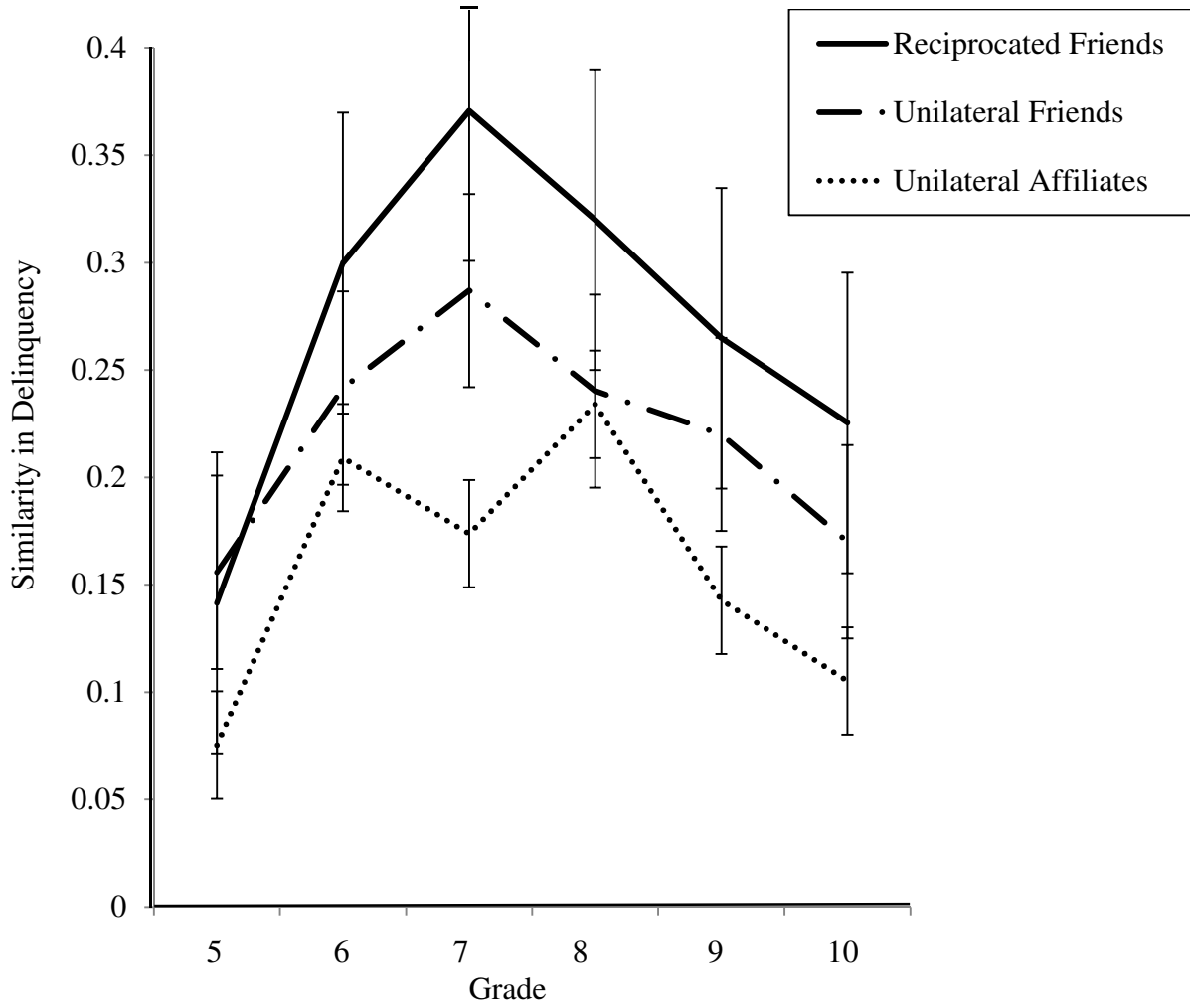


Figure 1. Age-related changes in similarity of delinquency across peer types. Confidence intervals depicted by vertical lines.

## REFERENCES

- Blos, P. (1962). *On adolescence*. New York: Free Press.
- Bender, D., & Lösel, F. (1997). Protective and risk effects of peer relations and social support on antisocial behaviour in adolescents from multi-problem milieus. *Journal of Adolescence*, 20, 661–678. doi:10.1006/jado.1997.0118
- Berndt, T. J. (1979). Developmental changes in conformity to peers and parents. *Developmental Psychology*, 15, 608-616. doi:10.1037/0012-1649.15.6.608
- Bronfenbrenner, U. (1970). *Two worlds of childhood*. New York: Sage.
- Brown, B. B., Clasen, D. R., & Eicher, S. A. (1986). Perceptions of peer pressure, peer conformity dispositions, and self-reported behavior among adolescents. *Developmental Psychology*, 22, 521-530. doi:10.1037/0012-1649.22.4.521
- Burk, W.J., Van Der Vorst, H., Kerr, M., & Stattin, H. (2012). Alcohol use and friendship dynamics: Selection and socialization in early-, middle-, and late-adolescent peer networks. *Journal of Studies on Alcohol and Drugs*, 73(1), 89-98. doi: 2011-30014-013
- Caspi, A. & Herbener, E. S. (1990). Continuity and change: Assortative marriage and the consistency of personality in adulthood. *Journal of Personality and Social Psychology*. 58(2), 250-258. doi:10.1037/0022-3514.58.2.250

- Cronbach, L.J. (1955). Processes affecting scores on “understanding of others” and “assumed similarity.” *Psychological Bulletin*, 52, 177-193.  
doi:10.1037/h0044919
- Clark, M. L. & Ayers, M. (1992). Friendship similarity during early adolescence: Gender and racial patterns. *The Journal of Psychology: Interdisciplinary and Applied* 126(4), 393-405.
- Costanzo, P. R., & Shaw, M. E. (1966). Conformity as a function of age level. *Child Development*, 37, 967-975. doi:10.2307/1126618
- DeKemp, R.A.T., Scholte, R.H.J., Overbeek, G., & Engels, R.C.M.E. (2006). Early adolescent delinquency: The role of parents and best friends. *Criminal Justice and Behavior*, 22(3), 488-510. doi:10.1177/0093854806286208.
- Devereux, E. (1970). The role of peer group experience in moral development. In J. Hill (Ed.), *Minnesota Symposium on Child Psychology* (Vol. 4, pp. 94-140). Minneapolis: University of Minnesota Press.
- Dishion, T. J., Andrews, D. W., & Crosby, L. (1995). Antisocial boys and their friends in early adolescence: Relationship characteristics, quality, and interactional process. *Child Development*, 66, 139–151. doi:10.2307/1131196
- Dishion, T.J., Nelson, S.E., Winter, C.E., & Bullock, B.M. (2004). Adolescent friendship as a dynamic system: Entropy and deviance in the etiology and course of male antisocial behavior. *Journal of Abnormal Child Psychology*, 32(6), 651–663.  
doi:10.1023/B:JACP.0000047213.31812.21



- Dishion, T. J., Patterson, G. R., Reid, J. B., & Griesler, P. C. (1994). Peer adaptation in the development of antisocial behavior: A confluence model. In L. R. Huesmann (Ed.), *Aggressive behavior: Current perspectives* (pp. 61–95). New York: Plenum.
- Dishion, T. J., Spracklen, K. M., Andrews, D. W., & Patterson, G. R. (1996). Deviancy training in male adolescent friendships. *Behavior Therapy*, *27*, 373–390.  
doi:10.1016/S0005-7894(96)80023-2
- Fang, X. (1997). Similarity between adolescents and their same-gender best friends. [Abstract]. *Acta Psychologica Sinica*, *29*(3), 278-285.
- Farrington, D. P. (1986). Age and crime. In M. Tonry & N. Morris (Eds.), *Crime and Justice: An Annual Review of Research* (Vol. 7, pp. 189-250). Chicago: University of Chicago Press.
- Farrington, D.P., Jolliffe, D., Hawkins, J. D., Catalano, R.F., Hill, K.G., & Kosterman, R. (2009). Why are boys more likely to be referred to Juvenile court? Gender differences in official and self-reported delinquency. *Victims and Offenders*, *5*(1), 25-44. doi: 10.1080/15564880903422963
- Furman, W. & Wehner, E.A. (1994). Romantic views: Toward a theory of adolescent romantic relationships. In R. Montemayor, G.R. Adams, & T.P. Gullota (Eds.), *Personal relationships during adolescence* (pp. 168-195). Thousand Oaks, CA: Sage.

- Gardner, M., & Steinberg, L. (2005). Peer influence on risk taking, risk preference, and risky decision making in adolescence and adulthood: An experimental study. *Developmental Psychology, 41*, 625-635. doi: 10.1037/0012-1649.41.4.625
- Giordano, P.C., Cernkovich, S.A., & Pugh, M.D. (1986). Friendships and delinquency. *The American Journal of Sociology, 91*(5), 1170-1202.
- Giordano, P.C., Phelps, K.D., Manning, W.D., & Longmore, M.A. (2008). Adolescent academic achievement and romantic relationships. *Social Science Research, 37*(1), 37-54. doi:10.1016/j.ssresearch.2007.06.004
- Granic, I. & Dishion, T. J. (2003). Deviant talk in adolescent friendships: A step toward measuring a pathogenic attractor process. *Social Development, 12*(3), 314-334. doi:10.1111/1467-9507.00236
- Güroğlu, B., van Lieshout C.F.M., Haselager, G.J.T., & Scholte, R.H.J. (2007). Similarity and complementarity of behavioral profiles of friendship types and types of friends: Friendships and psychosocial adjustment. *Journal of Research of Adolescence, 17*(2), 357-386. doi:10.1111/j.1532-7795.2007.00526.x
- Hartup, W. W. (1996). The company they keep: Friendships and their developmental significance. *Child Development, 67*, 1-13. doi:10.2307/1131681
- Haynie, D.L., Giordano, P.C., Manning, W.D., & Longmore, M.A. (2005). Adolescent romantic relationships and delinquent involvement. *Criminology, 43*, 177-210. doi: 10.1111/j.0011-1348.2005.00006.x
- Jaccard, J., Blanton, H., & Dodge, T. (2005). Peer influences on risk behavior: An analysis of the effects of a close friend. *Developmental Psychology, 41*, 135-147.

- Kandel, D. B. (1978a). Homophily, selection, and socialization in adolescent friendships. *The American Journal of Sociology*, 84(2) 427-436. doi:10.1086/226792
- Kandel, D.B. (1978b). Similarity in real-life adolescent friendship pairs. *Journal of Personality and Social Psychology*, 36(3), 306-312. doi:10.1037/0022-3514.36.3.306
- Kandel, D.B., Davies, M. & Baydar, N. (1990). The creation of interpersonal contexts: Homophily in dyadic relationships in adolescence and young adulthood. In Robins, L. N., Rutter, M. (1990). *Straight and devious pathways from childhood to adulthood* (pp. 221-241). New York: Cambridge University Press.
- Kiesner, J., Poulin, F., & Nicotra, E. (2003). Peer relations across contexts: Individual-network homophily and network inclusion in and after school. *Child Development*, 74, 1328–1343.
- Kenny, D.A., Kashy, D.A., & Cook, D.L. (2006). *Dyadic data analysis*. New York: Guilford.
- Kerr, M., Stattin, H., & Burk, W.J. (2010). A reinterpretation of parental monitoring in longitudinal perspective. *Journal of Research on Adolescence*, 20(1) 39-64. doi:10.1111/j.1532-7795.2009.00623.x
- Kupersmidt, J. B., DeRosier, M. E., & Patterson, C. P. (1995). Similarity as the basis for children's friendships: The roles of sociometric status, aggressive and withdrawn behavior, academic achievement and demographic characteristics. *Journal of Social and Personal Relationships* 12(3), 439-452. doi:10.1177/0265407595123007

- Kurdek & Krile, 1982. A developmental analysis of the relation between peer acceptance and both interpersonal understanding and perceived social self-competence. *Child Development*, 53(6), 1485-1491. doi:10.2307/1130075
- Larsen, H., Overbeek, G., Vermulst, A.A., Granic, I., & Engels, R.C.M.E. (2010). Initiation and continuation of best friends and adolescents' alcohol consumption: Do self-esteem and self-control function as moderators? *International Journal of Behavioral Development*, 34(5) 406-416. doi:10.1177/0165025409350363
- Laursen, B., Hafen, C.A., Kerr, M., & Stattin, H. (in press). Friend Influence over Adolescent Problem Behaviors as a Function of Relative Peer Acceptance: To be Liked is to be Emulated. *Journal of Abnormal Psychology*.
- Laursen, B., Popp, D., Burk, W.J., Kerr, M., & Stattin, H. (2008). Incorporating interdependence into developmental research: Examples from the study of homophily and homogeneity. In N.A. Card, J.P. Selig, & T.D. Little (Eds.) *Modeling dyadic and interdependent data in the developmental and behavioral sciences* (pp. 11-37). Routledge, New York.
- Laursen, B. & Williams, V. A. (1997). Perceptions of interdependence and closeness in family and peer relationships among adolescents with and without romantic partners. In S. Shulman & W.A. Collins (Eds.). *Romantic relationships in adolescence: Developmental perspectives* (pp. 3-20). San Francisco, CA, US: Jossey-Bass.

- Lazarsfeld, P. F., & Merton, R. K. (1954). Friendship as a Social Process. In M. Berger, T. Abel, and C. H. Page (Eds.). *Freedom and Control in Modern Society* (pp. 18-66). Princeton, N.J.: Van Nostrand.
- Linden-Andersen, S., Markiewicz, D., & Doyle, A. (2008). Perceived similarity among adolescent friends: The role of reciprocity, friendship, quality and gender. *The Journal of Early Adolescence*, 29(5), 617-637. doi:10.1177/0272431608324372
- Lubbers, M.J., Kuyper, H., & Van Der Werf, M.P.C. (2009) Social comparison with friends versus non-friends. *European Journal of Social Psychology*, 39(1), 52-68. doi:110.1002/ejsp.475
- Magnusson, D., Dunér, A., & Zetterblom, G. (1975). *Adjustment: A Longitudinal Study*. Wiley: New York.
- Mercken, L., Candel, M., Willems, P. and De Vries, H. (2007), Disentangling social selection and social influence effects on adolescent smoking: the importance of reciprocity in friendships. *Addiction*, 102, 1483–1492. doi: 10.1111/j.1360-0443.2007.01905.x
- Mercken, L., Candel, M., Willems, P. and De Vries, H. (2009). Social influence and selection effects in the context of smoking behavior: Changes during early and mid-adolescence. *Health Psychology*, 28(1), 73-82. doi: 10.1037/a0012791
- Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review*, 100, 674-701. doi: 10.1037/0033-295X.100.4.674.

- Monahan, K.C., Steinberg, L., & Cauffman, E. (2009). Affiliation with antisocial peers, susceptibility to peer influence and antisocial behavior during the transition to adulthood. *Developmental Psychology, 45*, 1520–1530.
- Moore, S. & Boldero, J. (1991). Psychosocial development and friendship functions in adolescence. *Sex Roles, 25*(9-10), 521-536. doi: 10.1007/BF00290061.
- Newcomb, A.F. & Brady, J.F. (1982). Mutuality in boys' friendship relations. *Child Development, 53*(2), 392-395. doi:10.2307/1128981
- Newcomb, A.F., Brady, J.F., & Hartup, W.W. (1979). Friendship and incentive condition as determinants of children's task-oriented social behavior. *Child Development, 50*(3), 878-881. doi:10.2307/1128958
- Nijhof, K.S., Scholte, R.H.J., Overbeek, G., & Engels, R.C.M.E. (2010). Friends' and Adolescents' Delinquency : The Moderating Role of Social Status and Reciprocity of Friendships. *Criminal Justice and Behavior, 37*(3), 289-305.  
doi:10.1177/0093854809355776
- Quinton, D., Pickles, A., Maughan, B., & Rutter, M. (1993) Partners, peers, and pathways: Assortative pairing and continuities in conduct disorder. *Development and Psychopathology. Special Issue: Milestones in the development of resilience, 5*(4), 763-783. doi:10.1017/S0954579400006271
- Reichart, C.S. & Gollob, H.F. (1986). When confidence intervals should be used instead of statistics tests and vice versa. In L. L Harlow, S.A. Mulaik, J.H. Steiger *What would we do if there were no significance tests*. Mahwah, New Jersey: Lawrence Erlbaum.

- Selfhout, M.H.W., Branje, S.J.T., & Meeus, W.H.J. (2007). The development of delinquency and perceived friendship quality in adolescent best friendship dyads. *Journal of Abnormal Child Psychology: An official publication of the International Society for Research in Child and Adolescent Psychopathology*, 36(4), 471-485. doi: 10.1007/s10802-007-9193-5
- Selfhout, M.H.W., Branje, S.J.T., & Meeus, W.H.J. (2008). The development of delinquency and perceived friendship quality in adolescent best friendship dyads. *Journal of Abnormal Child Psychology: An official publication of the International Society for Research in Child and Adolescent Psychopathology*, 36(4) 471-485. doi:10.1007/s10802-007-9193-5
- Snijders, T.A.B., & Baerveldt, C. (2003). A multilevel network study of the effect of delinquent behavior on friendship evolution. *Journal of Mathematical Sociology*, 27, 123-152. doi:10.1080/00222500390213119.
- Steinberg, L., & Monahan, K.C. (2007). Age differences in resistance to peer influence. *Developmental Psychology*, 43, 1531-1543. doi:10.1037/0012-1649.43.6.1531
- Steinberg, L. & Silverberg, S. B. (1986). The vicissitudes of autonomy in early adolescence. *Child Development*, 57(4), 841-851. doi: 10.2307/1130361
- Sullivan, H. S. (1953). *The interpersonal theory of psychiatry*. New York: Norton.
- Sumter, S. R., Bokhorst, C. L., Steinberg, L., & Westenberg, M. P. (2009). The developmental pattern of resistance to peer influence in adolescence: Will the teenager ever be able to resist? *Journal of Adolescence*, 32, 1009-1021. doi:10.1016/j.adolescence.2008.08.010

- Tolson, J.M. & Urberg, K.A. (1993) Similarity between adolescent best friends  
[Abstract]. *Journal of Adolescent Research*. 8(3), 274-288.  
doi:10.1177/074355489383003
- Urberg, K.W., Değirmencioğlu, S.M., & Pilgrim, C. (1997). Close friend and group  
influence on adolescent cigarette smoking and alcohol use. *Developmental  
Psychology*. 33(5), 834-844. doi: 0.1037/0012-1649.33.5.834
- Urberg, K.W., Luo, Q., Pilgrim, C., & Değirmencioğlu, S.M. (2003). A two-stage model  
of peer influence in adolescent substance use: Individual and relationship-specific  
differences in susceptibility to influence. *Addictive Behaviors*, 28, 1243-1256.  
doi:10.1016/S0306-4603(02)00256-3
- van der Zwalaw, C.S., Scholte, R.H.J., Vermulst, A.A., Buitelaar, J., Verkes, R.J., &  
Engels, R.C.M. (2009). The crown of love: Intimate relations and alcohol use in  
adolescence. *European Child & Adolescent Psychiatry* 18(7), 407-417.  
doi:10.1007/s00787-009-0748-6
- Vink, J.M., Willemsen, G. & Boomsma D.I. (2003). The association of current smoking  
behavior with the smoking behavior of parents, siblings, friends and spouses.  
*Addiction*, 98(7), 923-931. doi:10.1046/j.1360-0443.2003.00405.x
- Vitaro, F., Boivin, M., & Bukowski, W.M. (2009). The role of friendship in adolescent  
psychosocial development. In K.H. Rubin, W.M. Bukowski, & B. Laursen  
(Eds.), *Handbook of peer interactions, relationships, and groups* (pp. 568-585).  
New York: The Guilford Press.



Weerman F.M. & Smeenk, W.H. (2005). Peer similarity in delinquency for different types of friends: A comparison using two measurement methods. *Criminology: An Interdisciplinary Journal*, 43(2), 499-524. doi:10.1111/j.0011-1348.2005.00015.x