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Longitudinal Associations Between Delinquent Behavior of Friends and Delinquent
Behavior of Adolescents: Moderation by Adolescent Personality Traits

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Abstract

In this longitudinal study we examined whether personality traits (parent-rated Big Five personality traits) render some adolescents more susceptible than others to delinquent behavior of friends, predicting rank-order changes in adolescents' self-reported delinquent behavior. We examine susceptibility to both perceived (reported by adolescents) and self-reported (reported by friends) delinquent behavior of friends.

Participants in this two-wave study were 285 Dutch adolescents and their best friend. The adolescents (50% girls) were 15.5 years old on average ($SD= 0.8$ years), and their best friends ($N= 176$; 58% girls) were 15.1 years old ($SD= 1.5$ years).

Perceived (but not self-reported) delinquency of friends predicted a stronger increase in adolescent delinquency one year later, especially among adolescents low or average on conscientiousness. Emotional stability, agreeableness, extraversion, and openness did not moderate associations between delinquency of friends and delinquency of adolescents.

Our findings show that low conscientiousness serves as a risk factor, increasing vulnerability to perceived delinquent behavior of friends, while high conscientiousness serves as protective factor, increasing resilience to perceived delinquent behavior of friends. Our findings also show that adolescents are susceptible to, and differ in susceptibility to, friends' delinquent behavior as they perceive it—not to delinquent behavior as reported by friends themselves.

Keywords

delinquent behavior, personality, peer socialization, diathesis-stress, differential susceptibility, adolescence

A large body of evidence suggests that adolescent delinquent behavior is strongly associated with delinquent behavior of friends (e.g. Dishion, McCord, & Poulin, 1999; Haynie & Osgood, 2005; Patterson, Dishion, & Yoerger, 2000; Regnerus 2002; Vitaro, Brendgen, & Tremblay, 2000). Yet not all adolescents with delinquent friends display delinquent behavior. In this study we examine which adolescents are more and less likely to be influenced by the delinquent behaviors of their friends, depending on their personality traits. Delinquent behavior is defined as “behavior that violates basic norms of the society, and, when officially known, evokes a judgment by agents of criminal justice that such norms have been violated” (Cloward & Ohlin, 1960, p. 3). If we would understand what factors make adolescents susceptible or resistant to their friends’ delinquent behaviors, intervention and prevention efforts could be targeted in a more informed way.

Peer Socialization of Delinquent Behavior

When adolescents change their behavior by adopting their friends’ delinquency, peer socialization processes are at work. Peer socialization refers to the tendency for adolescents’ and their peers’ behavior and attitudes to become more similar over time (Kandel, 1978). Such socialization processes often occur outside of awareness; while adolescents may not intend to influence their peers, they engage in relationship behaviors that nevertheless direct the behaviors and attitudes of their peers towards their own. Peer socialization processes have been explained by social learning theories and identity-based theories (Brechwald & Prinstein, 2011). Whereas social learning theories emphasize social rewards for antisocial behavior (Bandura, 1973), identity-based theories stress internal rewards and forming a positive self-view (Leary & Baumeister 2000; Markus & Wurf, 1987). By conforming to peers’ behavior, adolescents engage in behaviors that are directly reinforced by peers, are associated with high peer status, match the social norms of a group, and contribute to a

favorable self-identity (Brechwald & Prinstein, 2011). This holds true for both normative and delinquent behavior.

Models of Variation in Susceptibility to Peer Socialization of Delinquent Behavior

Still, not all adolescents join in with their friends' delinquent behavior. The diathesis stress-model can be used to explain variation in susceptibility to peer socialization of delinquent behavior. This model proposes that based on dispositional characteristics, some individuals are more vulnerable than others to environmental risk and negative socialization influences (Zuckerman, 1999). Some have dispositional characteristics that render them vulnerable to negative socialization influences, whereas others show resilience and remain relatively unaffected by these same socialization influences. Personality traits are important dispositional characteristics that can explain variation in how people tend to respond to socialization influences (Buss, 1991; Denissen & Penke, 2008), yet they have scarcely been studied in relation to peer socialization of delinquent behavior. Our main aim is to study whether some adolescents are more susceptible than others to friends' delinquent behavior—reflected in increases in their own delinquent behavior over time—, depending on their personality traits.

Personality Traits as Moderators of Susceptibility to Peer Socialization of Delinquent Behavior

We focus on the Big Five personality traits as moderators of susceptibility to peer socialization of delinquent behavior (Caspi & Shiner, 2006): Conscientiousness, emotional stability, agreeableness, extraversion, and openness. Especially conscientiousness, emotional stability, and agreeableness have been suggested as salient personality traits to delinquent behavior (Jones, Miller, & Lynam, 2011).

Conscientiousness involves orderliness and self-control in the pursuit of goals (Caspi & Shiner, 2006). Previous research has shown that dispositional characteristics related to

conscientiousness strengthen peer socialization effects. Impulsive and less self-regulated adolescents, relative to less impulsive and self-regulated adolescents, were more vulnerable to the effects friends' antisocial behavior on own antisocial behavior (Gardner, Dishion, & Connell, 2008; Goodnight, Bates, Newman, Dodge, & Pettit, 2006; Snyder et al., 2010). Further, friends' delinquency was related more strongly to adolescent delinquency among adolescents with low flexibility and low task orientation, compared to more flexible and task-oriented adolescents (Mrug, Madan, & Windle, 2012). In addition, scores on a "resistance to peer influence" measure have been found to correlate negatively with impulsivity (Stautz & Cooper, 2014). Adolescents low on conscientiousness seem less able to suppress dominant responses in favor of behavior that may have long-term value to them. This may make them relatively sensitive to immediate rewards and the pursuit of salient short-term goals, such as gaining peers' approval (Bandura, 1973; Denissen & Penke, 2008). They might thus more easily adopt the behaviors for which they are reinforced, including undesirable behaviors such as delinquency.

However, not all studies have found support for conscientiousness or impulsivity as a moderator of susceptibility to friends' delinquency. Two studies that examined slightly different personality constructs did not find moderation. One looked at the impulsive-irresponsible dimension of psychopathic traits (Kerr, van Zalk, & Stattin, 2012)—which correlates moderately with lower levels of conscientiousness (Roose et al., 2012)—, and the other looked at the personality type of undercontrollers (Yu, Branje, Keijsers, Koot, & Meeus, 2013)—a group characterized by particularly low levels of conscientiousness. Also, two studies found results in the opposite direction. First, less impulsive children were more susceptible to peer delinquency, although this study had relatively small sample size ($N=89$) compared to other studies examining traits related to conscientiousness as moderators (Vitulano, Fite, & Rathert, 2010). Second, in one study individuals high on effortful control,

relative to those lower on effortful control, showed the strongest association between a substance use lifestyle during adolescence and later alcohol use (Piehler, Véronneau, & Dishion, 2012). However, individuals low on effortful control had relatively high levels of alcohol use life in general, even when they had been exposed to little substance use during adolescence.

Emotional stability entails the regulation of emotions and the tendency to experience distressing emotions (Caspi & Shiner, 2006). Research on peer socialization processes has examined dispositional levels of social anxiety and low positive moods (both related to low emotional stability) as moderators. They found that, compared to non-socially anxious adolescents, socially anxious adolescents were more likely to conform to antisocial behavior of peers (Cohen & Prinstein, 2006), and among adolescents with low positive moods, delinquency of friends was related more strongly to own delinquency than among more positive adolescents (Mrug et al., 2012). Emotionally unstable adolescents depend strongly on the approval of friends for establishing a positive self-view (Denissen & Penke, 2008; Leary & Baumeister, 2000), and might therefore be more inclined to conform to their friends' behaviors and attitudes, including delinquency. In sum, we expect friends' delinquent behavior will predict increased delinquent behavior, especially among adolescents low on conscientiousness and emotional stability.

As to agreeableness, clear predictions are difficult to make. Adolescents low on agreeableness have been found to be more likely to display delinquent behavior in response to harsh parenting (de Haan, Prinzie, & Deković, 2010), while highly agreeable adolescents were more inclined to adopt their peers' drinking behavior (van Schoor, Bot, & Engels, 2008). Agreeableness taps into individual differences in the tendency to cooperate, or to maintain harmonious relationships (Buss, 1991, Caspi & Shiner, 2006). When their friends act delinquent, agreeable adolescents might be inclined to cooperate with their delinquent friends,

leading to increases in delinquent behavior. At the same time, such delinquent behavior is at odds with their need to have positive relationships with others. From this point of view, agreeable adolescents may be the ones least likely to adopt their friends' delinquent behavior. Instead, adolescents low on agreeableness might be more likely to engage in delinquent behavior. Therefore, we do not assert hypotheses about the direction of moderation for agreeableness.

Finally, concerning extraversion and openness, evidence of their moderating effects is less strong and more inconsistent. Studies looking at socialization by parents showed that children low on extraversion were more susceptible to harsh parenting predicting delinquency (de Haan et al., 2010), whereas women high on extraversion were more susceptible to a disrupted family environment (Jolliffe, 2013). Also, those high on openness were more susceptible to harsh parenting and a disrupted family environment. We therefore include extraversion and openness in our study for exploratory reasons, examining whether these traits also moderate susceptibility to peer socialization of delinquent behavior.

Comparing Susceptibility to Perceived and Self-reported Delinquent Behavior of Friends

When studying whether adolescents are influenced by their friends' delinquent behavior, it is important to consider who reports on friends' delinquent behavior. On the one hand, social influence results mainly from perceived social norms, rather than actual social norms (Brechwald & Prinstein, 2011; Prentice & Miller, 1996). On the other hand, adolescents oftentimes overestimate the frequency of their friends' delinquent behaviors (Prinstein & Wang, 2005) as well as the similarity between their own delinquent behavior and their friends' delinquent behavior (Kandel, 1996; Regnerus, 2002), leading to overestimation of the strength of this association. Studies using friends' reports on their own delinquency sometimes failed to find that friend delinquency predicted adolescent delinquency (Poulin,

Dishion, & Haas, 1999; de Kemp, Scholte, Overbeek, & Engels, 2006); others still found friend delinquency to predict adolescent delinquency (Haynie & Osgood, 2005; Vitaro et al., 2000). However, studies rarely compare susceptibility to perceived delinquent behavior of friends with susceptibility to self-reported delinquent behavior of friends (but see Weerman & Smeenk, 2005; Meldrum & Boman, 2013). This constitutes our second aim. Susceptible adolescents, in seeking approval of friends, likely steer their own behavior based on their *perceptions* of how their friends behave. Thus, we expect (differences in) susceptibility to perceived delinquent behavior of friends to be stronger than (differences in) susceptibility to self-reported delinquent behavior of friends.

To summarize, we examine whether personality traits render some adolescents more susceptible to friends' delinquent behavior than others. This longitudinal study extends current knowledge by examining for whom (depending on personality traits) and under which circumstances (perceived vs. self-reported delinquent behavior of friends) delinquent behavior of friends predicts changes in adolescent delinquent behavior. We expect those low on conscientiousness and emotional stability to be especially susceptible to delinquent behavior of friends. We also expect adolescents' susceptibility to friends' delinquent behavior to depend on their level of agreeableness. Finally, we expect adolescents to be more susceptible to, and vary more in susceptibility to, perceived delinquent behavior of friends than to self-reported delinquent behavior of friends.

Methods

Participants and Procedure

Participants were 285 Dutch adolescents and their best friend from the Nijmegen Family and Personality Study (Haselager, Knippenberg & van Aken, 2014). Families for this study were recruited through lists of eligible families provided by a representative selection of 23 municipalities throughout the Netherlands. Families were eligible if they were two-parent

families with two adolescent children. In the present study we focused on the oldest (i.e., middle adolescent) child within each family. Families gave informed consent and participated in two annual measurement waves, Time 1 (T1) and Time 2 (T2). In each wave, an interviewer visited the families at home and asked the mother, the father, and the participating adolescent to complete a questionnaire. Additionally, at T1 the interviewer asked each family member to invite their personal best friend to participate in the study. These friends were instructed to fill in the questionnaire and send it back by mail.

Longitudinal attrition was nonexistent: both at T1 and at T2 285 families participated. At T1, 177 best friends of adolescents (62%) participated. Adolescents whose friends participated at T1 did not differ from adolescents whose friends did not participate with respect to age, parental educational level and most of the research variables. However, the two groups did differ on gender ($\chi^2(1) = 16.89, p < .001, \phi = .24$), agreeableness ($t(189) = 2.18, p = .03, d = 0.27$), conscientiousness ($t(283) = 3.05, p = .002, d = 0.38$) and delinquency at T1 ($t(283) = -2.08, p = .04, d = -0.25$). Adolescents whose friends participated were more likely to be female (60% vs. 35%), were more agreeable ($M_{\text{friends}} = 5.68, SD = 0.55$ vs. $M_{\text{no_friends}} = 5.51, SD = 0.71$) and conscientious ($M_{\text{friends}} = 4.26, SD = 1.22$ vs. $M_{\text{no_friends}} = 3.82, SD = 1.11$), and less delinquent ($M_{\text{friends}} = 1.75, SD = 0.60$ vs. $M_{\text{no_friends}} = 1.90, SD = 0.62$). Complete data were provided by 99% of the participating families at T1, by 97% at T2 and by 99% of the participating friends at T1. Missing data were handled in Mplus using the full-information-maximum-likelihood (FIML) method.

At T1 the adolescents (50% girls) were 15.5 years old on average ($SD = 0.8$ years). Their best friends (58% girls) were 15.1 years old on average ($SD = 1.5$ years). Most adolescents (99%) were born in the Netherlands, as were their best friends (97%). The families belonged primarily to the Dutch middle to upper-middle class. Parents varied in the highest level of education they had achieved at the time of the study: Higher vocational

education or university (45% of fathers and 27% of mothers), intermediate vocational education (25% of fathers and 31% of mothers), or high school or lower vocational education (29% of fathers and 41% of mothers).

Measures

Delinquency. The Delinquency scale of The Nijmegen problem behaviour list (NPBL; Scholte, Vermulst, & de Bruyn, 2001) was used to obtain reports on adolescents' and their best friends' delinquency. The NPBL consists of items taken from the Child Behavior Checklist (CBCL; Achenbach, 1991), selected to represent problem behavior in a non-clinical setting. Adolescents rated their own delinquency (e.g. "I cheat others" "I do things that can get me into trouble with the law") at T1 and T2, and their best friends' delinquency at T1. Best friends also rated their own delinquency at T1. The scale consists of five items answered on a five-point scale ranging from 1 (*does not apply to this person at all*) to 5 (*applies to this person very well*), averaged to form a scale score. Cronbach's α s for delinquency were .69 at T1 and .78 at T2 when adolescents reported about themselves, and .81 when adolescents reported about their best friend, and .70 when friends reported about themselves.

Personality traits. Mothers and fathers judged the personality of their child at T1 using a short version (six items per scale) of the Big-Five personality markers (Goldberg, 1992). Parents rated the items along a seven-point Likert-scale ranging from 1 (*very untrue of this person*) to 7 (*very true of this person*), resulting in average scores for five personality dimensions. Conscientiousness measures the ability to control impulses as well as the degree to which the person is well-organized, thorough, and goal-oriented (e.g. "meticulous"). Emotional stability assesses the regulation of emotions and the extent to which the person is emotionally stable or plagued by unpleasant experiences and distressing emotions (e.g. "nervous"). Agreeableness taps into the prosocial nature of the person and can range from warm and committed to others to antagonistic (e.g. "friendly"). Extraversion assesses the

extent to which the person actively engages the world or avoids intense (social) experience (e.g. “talkative”). Openness measures the interest and willingness to try or consider new activities, ideas, and beliefs, along with the flexibility of information processing (e.g. “versatile”). Cronbach’s α s for the personality dimensions ranged from 0.79 to 0.91 for father reports about adolescent personality and from 0.85 to 0.94 for mother reports about adolescent personality. Correlations between mother and father reports ranged from .34 to .62 (p s < .001). We combined mother and father reports, resulting in a single score on each personality dimension. Parent reports constitute a valid source of information about adolescents’ personality: Whereas adolescents tend to judge personality in a more generalized and subjective manner, judging family members rather similarly, parents focus more on the individual characteristics of family members and base their judgments on this information (Branje, van Aken, van Lieshout, & Mathijssen, 2003).

Analyses

Hierarchical regression analysis in Mplus 6.0 was used to test our hypotheses (Muthén & Muthén, 2010). We used robust maximum likelihood estimation¹ to obtain standard errors that are robust to non-normality (skewness = 0.83 and kurtosis = 0.48 for adolescent delinquency). Predictors were centered prior to computing interaction terms to reduce multicollinearity (Cohen, Cohen, West, & Aiken, 2003). To control for inflation of Type I error rates we applied a False Discovery Rate (FDR) procedure within each model, which takes into account the proportion of expected false positive results among a set of significant findings (Benjamini & Hochberg, 1995).

For the first question, pertaining to differences in susceptibility to perceived delinquency of friends, we entered adolescent delinquency at T1 in Step 1. Thus, in

¹ We re-estimated our models using a bootstrap procedure with $N = 1000$ bootstrap resamples. This yielded essentially the same results. Results are available from the first author upon request.

subsequent models we effectively predicted rank-order changes in adolescent delinquency from T1 to T2. In Step 2 we added gender as a control variable, and perceived friend delinquency, and the three personality traits. In Step 3, we added interactions between friend delinquency and personality traits; these interactions were examined in five separate models (3a: conscientiousness, 3b: emotional stability, 3c: agreeableness, 3d: extraversion, 3e: openness). In addition to the predictive paths, all models estimated covariances among all predictors—a standard procedure for regression analysis. For the second question, pertaining to differences in susceptibility to self-reported delinquency of friends, we repeated all analyses replacing perceived delinquency of friends by self-reported delinquency of friends as a predictor.

Significant interactions were followed by estimating the relation between the predictor and the outcome at personality values plus, exactly at, or minus one *SD* from the sample mean (Cohen et al., 2003). We also calculated the region of significance, which defined the *range* of personality values for which friend delinquency significantly predicted adolescent delinquency (Preacher, Curran, & Bauer, 2006).

Results

Descriptive Results

Correlations between the research variables are displayed in Table 1. Adolescent delinquency displayed strong relative stability from T1 to T2. Adolescent delinquency also demonstrated mean level stability; it did not differ between T1 and T2 (paired-samples *t*-test: $t(280) = -0.40, p = .69, d = -0.02$). Friend delinquency correlated positively with adolescent delinquency, both concurrently and longitudinally. These associations were moderate in strength when they involved friends' self-reported delinquent behavior, and strong when they involved perceived delinquent behavior of friends. Perceived and self-reported delinquency of friends correlated moderately. In general, friends tended to ascribe slightly higher levels of

delinquency to themselves than adolescents did to them (paired-samples t -tests: $t(175) = 4.11$, $p < .001$, $d = 0.33$). Most personality traits were weakly correlated with adolescent delinquency: More Agreeable and more Conscientious adolescents tended to report lower levels of delinquency, while the other traits were unrelated to adolescent delinquency.

Susceptibility to Perceived Delinquent Behavior of Friends

Main effects of personality and delinquency. Adolescent delinquency was uniquely predicted by previous levels of delinquency, but not by gender (Table 2, Step 1 and 2). Moreover, perceived friend delinquency uniquely predicted rank-order changes in adolescent delinquency from T1 to T2. None of the personality traits predicted later delinquency.

Moderation by personality traits. Next, we added interactions with personality traits to the model, one by one.² No significant interactions emerged of agreeableness, emotional stability, extraversion, or openness with friend delinquency (Table 3, Steps 3b, 3c, 3d, and 3e). Conscientiousness however, moderated the association between perceived friend delinquency and rank-order changes in adolescent delinquency (Table 3, Step 3a)³. Decomposition of the interaction indicated that perceived friend delinquency predicted stronger increase in adolescent delinquency at low and average levels of conscientiousness ($\beta = 0.41$, $p < .001$ and $\beta = 0.26$, $p < .001$, respectively), but not at high levels of conscientiousness ($\beta = 0.12$, $p = .07$) (see Figure 1). The positive association between perceived friend delinquency and rank-order increases in adolescent delinquency was

² To explore whether gender differences in moderating effects existed, we added two-way interactions involving gender in Step 4, and three-way interactions between gender, friend delinquency and personality traits in Step 5. No significant two- or three-way interactions appeared, indicating that variation in susceptibility to delinquent behaviors of friends due to personality traits is similar for boys and girls. Detailed results are available from the corresponding author upon request.

³ Results—in particular the interaction between perceived friend delinquency and conscientiousness—were essentially the same among the subsample of 177 adolescents whose friends participated in the study.

significant at values of conscientiousness below $M + 0.95SD$.⁴ The shaded area of Figure 1 represents the region of significance. Thus, among adolescents low or average on conscientiousness, perceived delinquent behavior of friends at T1 predicted a stronger increase in adolescent delinquent behavior, making these adolescents seem especially susceptible to peer socialization of delinquent behavior. Adolescents high on conscientiousness appeared to be resilient to such socialization effects.

Susceptibility to Self-reported Delinquent Behavior of Friends

Main effects of personality and delinquency. After taking into account previous levels of adolescent delinquency, changes in adolescent delinquency were not predicted by gender, nor by friends' self-reported delinquency or any of the personality traits (Table 3, Steps 1 and 2).

Moderation by personality traits. Agreeableness, conscientiousness, emotional stability, extraversion, or openness did not moderate the associations between friends' self-reported delinquency on the one hand, and changes in adolescent delinquency on the other hand: None of the interaction effects were significant, $\Delta R^2s < .002$, $ps > .05$ (Table 3, Step 3). Thus, adolescents did not differ in their susceptibility to friends' self-reported delinquent behavior.

Discussion

We examined whether personality traits render some adolescents more susceptible to delinquent behavior of friends than others. Differences in susceptibility to peer socialization effects are especially salient during adolescence, when interactions with peers are frequent (Brown, 1990) and adolescents become increasingly concerned about the impressions they make on their peers (Steinberg & Silverberg, 1986; LaFontana & Cillessen, 2009). It is during

⁴ We report only those region boundaries that also fall within the measured range of moderator, predictor, and outcome variables.

this developmental phase that adolescents become more and more likely to change their behavior to conform to their peers. In short, we found that perceived delinquent behavior of friends predicted stronger increases in adolescent delinquent behavior over a period of one year, especially among adolescents low or average on conscientiousness. While low conscientiousness seemed to strengthen peer socialization of delinquent behavior, high conscientiousness seemed to act as a buffer against such socialization effects.

These results are in line with previous studies that examined how peer socialization of delinquent behavior is moderated by traits related to conscientiousness (Gardner et al., 2008; Goodnight et al., 2006; Mrug et al., 2012; Snyder et al., 2010, cf. Vitulano et al., 2010). Our results support a diathesis–stress model, whereby adolescents’ own disposition, in this case low conscientiousness exacerbates the negative socialization influences of friends showing delinquent behavior (Zuckerman, 1999). Less conscientious adolescents are relatively sensitive to short-term goals such as gaining peers approval and relatively insensitive to long-term goals such as finishing school (Caspi & Shiner, 2006). They might thus more easily adopt the behaviors for which they are reinforced by their delinquent peers.

The results are also in line with previous research showing that high effortful control (the temperament counterpart of conscientiousness (Caspi & Shiner, 2006)) promotes resilience in the face of peer deviance (Gardner et al., 2008). Presumably, adolescents high on effortful control or conscientiousness are less influenced by the potentially rewarding aspects of deviant peer interaction (see also Buck, Kretsch, & Harden, 2013). They may find it easier to stay focused on their long-term goals and are not easily distracted by potential short-term rewards that would undermine their long-term goals. Additionally, conscientiousness is associated with academic success (O’Connor & Paunonen, 2007) and more positive relationships with parents and teachers (Branje, van Lieshout, & van Aken, 2004; Zee, Koomen, & van der Veen, 2013). These experiences of success and positive relationships may

serve as alternative sources of positive feedback, status, and favorable self-views for youth high on conscientiousness. Positive reinforcement of friends or obtaining status amongst peer for delinquent behavior may thus seem less salient to these adolescents.

In sum, low conscientiousness likely serves as a risk factor for developing delinquent behavior, strengthening the effects of perceiving friends as acting delinquent on one's own delinquent behavior. High conscientiousness on the other hand serves as a buffer, making adolescents resilient to developing delinquent behavior, even when friends are perceived as acting delinquent.

Although the results pertaining to conscientiousness seem to support the diathesis-stress model, an alternative way to explain variation in susceptibility to socialization is the differential susceptibility model. The differential susceptibility model postulates that people vary in their general susceptibility to socialization, with some being more strongly affected than others (Belsky, 1997, 2005; Belsky, Bakermans-Kranenburg, & van IJzendoorn, 2007; Ellis, Boyce, Belsky, Bakermans-Kranenburg, & van IJzendoorn, 2011). Specifically, those individuals that are most vulnerable to negative socialization influences are thought to also profit most from positive socialization influences, a pattern labeled 'for better and for worse' (Belsky et al., 2007). Thus, the differential susceptibility model differs from the diathesis-stress model, which emphasizes the disproportionate susceptibility to negative socialization influences only. Temperament- and personality traits (especially negative emotionality) have been suggested to mark differences in susceptibility (for a review, see Belsky & Pluess, 2009).

That our results support a diathesis-stress model instead of a differential susceptibility model could be due to our focus on environments and outcomes spanning the negative end of the spectrum, i.e., from delinquency to the absence of delinquency. This limits the possibility to find that those adolescents who show the most adverse outcomes under harsh

circumstances also flourish under supportive circumstances, like differential susceptibility would predict. Future research could extend these results by examining not only variation in susceptibility to negative peer socialization influences, but also to positive peer socialization influences. In addition, it should examine variation in not only negative developmental outcomes, but also positive developmental outcomes. This would be in line with a differential susceptibility model, which postulates that people vary in their susceptibility to both negative and positive socialization influences and their associated developmental outcomes (Ellis et al., 2011).

The association between perceived delinquent behavior of friends and adolescent delinquent behavior did not depend on emotional stability or agreeableness. It has been suggested that emotional stability may matter more for the development of aggression than for delinquency (de Haan et al., 2010). As to agreeableness, the results contrast with a study showing that highly agreeable adolescents, compared to less agreeable adolescents, were more likely to drink when they socialized in a high-drinking peer group (van Schoor et al., 2008). While the cooperative nature of highly agreeable adolescents (Buss, 1991; Caspi & Shiner, 2006) might persuade them to adopt their peers' drinking behaviors, it does not seem to make them adopt their peers' delinquent behaviors. In contrast to drinking, cooperating with friends' delinquency also implies selfishness towards the victims of delinquency, which goes against agreeable individuals' tendencies (Caspi & Shiner, 2006). As to the lack of moderation by extraversion and openness, these findings are consistent with a meta-analysis showing that these traits are the least salient to the development of delinquent behavior (Jones et al., 2011).

Finally, we compared susceptibility to perceived friend delinquency and self-reported friend delinquency and found that adolescents are susceptible to, and differ in susceptibility to, friends' delinquent behavior as they perceive it—not to delinquent behavior as reported by

friends themselves. These results are in line with our predictions and support the view that social influences seem to result mainly from perceived social norms, rather than actual social norms (Brechwald & Prinstein, 2011; Prentice & Miller, 1996). These perceptions can influence individuals regardless of their correspondence to actual behavior. As an illustration, programs to reduce drug use succeeded because they changed adolescents' *perception* of their peers' norms regarding drug use (Cook, Anson, & Walchli, 1993), not because they increased resistance to peer pressure. An alternative explanation of our findings is that adolescents tend to attribute their own delinquent behaviors to their friends (Bauman & Ennett, 1996), creating the apparent association between own and friends' delinquent behavior. In general, people who engage in a certain behavior themselves have been found to overestimate the prevalence of that behavior among others, which is known as the false-consensus effect (Marks & Miller, 1987). However, the longitudinal character of our study, in which perceived delinquency of friends predicted *subsequent changes* in adolescent delinquency, precludes the false-consensus effect.

Our findings did not depend on adolescent gender. This is in line with previous studies which found that regardless of their gender, more impulsive and less task-oriented adolescents were more susceptible to friend delinquency and less conscientious adolescents were more susceptible to overreactive parenting predicting delinquency (Goodnight et al., 2006; Mrug et al., 2012; de Haan et al., 2010). Thus, both boys and girls exhibiting poor regulatory abilities seem to be especially susceptible to delinquent behavior of friends.

Among the strengths of this study are its longitudinal design, and the multi-informant data. Adolescents' personality was rated by their parents, friend-reported delinquency was rated by the friends, and delinquency and perceived friend delinquency were rated by the adolescent participants themselves. This allowed us to compare susceptibility to adolescent-reported (perceived) and friend-reported delinquent behavior. Moreover, these features

allowed us to minimize informant bias and provide a more detailed picture as to the circumstances under which peer socialization effects take place.

Despite these strengths, three limitations should be noted. First, our study is limited by the fact that only 62% of the best friends provided data about themselves, reducing the sample size for analyses using friend-reported data. Moreover, the best friends who provided data were befriended to the more well-adjusted adolescents in our sample, who displayed relatively low levels of delinquent behavior themselves. These two issues may have limited the power to detect (differences in) susceptibility to friends' self-reported delinquent behavior among these adolescents. However, the results concerning perceived delinquency of friends were essentially similar among the 62% of adolescents whose friends participated in the study, compared to the entire sample of adolescents. Thus, differences between correlates of perceived and self-reported delinquency of friends likely do not reflect differences between the subset and the entire sample of adolescents, but rather reflect actual differences between correlates of perceived and self-reported delinquent behavior of friends. Second, most adolescents were born in the Netherlands and came from fairly high socioeconomic status families. The results may thus be limited to Dutch middle to high socioeconomic status samples, and it remains to be seen whether they can be generalized to more at-risk or ethnically diverse samples. Third, the magnitude of the obtained moderation effect was small, although it was comparable to results of other studies examining temperament and personality as moderators of the effects of peer delinquency (e.g. Gardner et al. 2008; Mrug et al., 2012; Snyder et al., 2010). Interaction effects are notoriously difficult to detect in field studies (McClelland & Judd, 1993), and more precise measurement of the environment (i.e. delinquent behavior of friends) as well as oversampling extreme scores on the moderator (i.e. personality traits) might counter this issue.

In our study we used a variable-centered approach, to study how the Big Five personality traits moderate susceptibility of adolescents to delinquent behavior of their friends. Our approach can be complemented by a person-centered approach (Laursen & Hoff, 2006). Such an approach would allow examining how the configuration of personality traits within adolescents moderates their susceptibility to delinquent behavior of friends (see for an example Yu et al., 2013).

In conclusion, we studied how adolescents differ in susceptibility to delinquent behavior of friends depending on their personality. Adolescents low or average on conscientiousness seemed to be susceptible to perceived delinquent behavior of friends, predicting increases in their own delinquent behavior. Adolescents high on conscientiousness on the other hand, displayed resilience to perceived delinquent behavior of friends. Our findings indicate that for adolescents, having more delinquent friends does not necessarily predict more delinquent behavior; this depends on the personality of the adolescent, as well as on whether adolescents perceive their friends' delinquent behavior.

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Table 1

Means, Standard Deviations and Correlations for Measures of Delinquency and Personality

	1	2	3	4	5	6	7	8	9
1. Delinquency Adolescent T2	-								
2. Delinquency Adolescent T1	.66***	-							
3. Perceived Delinquency Friend T1	.60***	.68***	-						
4. Self-reported Delinquency Friend T1	.30***	.42***	.43***	-					
5. Conscientiousness Adolescent T1	-.26***	-.28***	-.13*	-.10	-				
6. Emotional stability Adolescent T1	-.04	-.09	-.04	-.05	.20***	-			
7. Agreeableness Adolescent T1	-.23***	-.27***	-.18**	-.16*	.37***	.21***	-		
8. Extraversion T1	.04	.09	-.01	.01	.03	.21***	.24***	-	
9. Openness T1	-.02	-.06	-.04	-.03	.32***	.40***	.31***	.20**	-
<i>M</i>	1.82	1.81	1.68	1.87	4.91	5.62	4.09	4.68	4.87
<i>SD</i>	0.70	0.61	0.68	0.62	0.97	0.62	1.20	0.85	0.92

Note. T1 = Time 1; T2 = Time 2; $N = 285$ at T1 and $N = 282$ at T2 for adolescent-reported and parent-reported data; $N = 176$ at T1 for friend-reported data.

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 2

Hierarchical Regressions Predicting Adolescent Delinquency at T2 using Personality Traits and Perceived Friend Delinquency at T1

	Predictor	<i>B</i>	<i>SE</i>	95% CI	β	ΔR^2
Step 1	Delinquency Adolescent T1	0.76	0.06	[0.64, 0.88]	.66***	.44***
Step 2	Gender	-0.09	0.06	[-0.21, 0.03]	-.06	.06***
	Perceived Delinquency Friend	0.29	0.05	[0.19, 0.40]	.29***	
	Conscientiousness	-0.06	0.03	[-0.11, -0.01]	-.10* ^a	
	Emotional stability	0.01	0.03	[-0.06, 0.07]	.01	
	Agreeableness	-0.08	0.06	[-0.19, 0.02]	-.07	
	Extraversion	0.00	0.03	[-0.05, 0.06]	.01	
	Openness	0.05	0.04	[-0.02, 0.13]	.07	
Step 3a	Conscientiousness * Perceived Delinquency Friend	-0.13	0.03	[-0.19, -0.06]	-.15***	.02**
Step 3b	Emotional stability * Perceived Delinquency Friend	-0.08	0.06	[-0.20, 0.04]	-.06	.00
Step 3c	Agreeableness * Perceived Delinquency Friend	-0.03	0.07	[-0.16, 0.09]	-.02	.00
Step 3d	Extraversion * Perceived Delinquency Friend	0.03	0.05	[-0.06, 0.11]	.02	.00
Step 3e	Openness * Perceived Delinquency Friend	-0.07	0.04	[-0.15, 0.01]	-.06	.01

Note. Regression coefficients are coefficients upon first entry. T1 = Time 1; T2 = Time 2; *N* = 285.

^a the critical *p*-value for this path is .019 according to the FDR procedure, therefore this path is not significant.

[†] *p* < .10; * *p* < .05; ** *p* < .01; *** *p* < .001.

Table 3

Hierarchical Regressions Predicting Adolescent Delinquency at T2 using Personality Traits and Self-reported Friend Delinquency at T1

	Predictor	<i>B</i>	<i>SE</i>	95% CI	β	ΔR^2
Step 1	Delinquency Adolescent T1	0.76	0.06	[0.64, 0.88]	.66***	.44***
Step 2	Gender	-0.03	0.08	[-0.19, 0.13]	-.03	.00
	Self-reported Delinquency Friend	0.05	0.08	[-0.11, 0.20]	.04	
	Conscientiousness	-0.04	0.04	[-0.11, 0.03]	-.07	
	Emotional stability	0.09	0.04	[0.01, 0.17]	.11** ^a	
	Agreeableness	-0.02	0.07	[-0.17, 0.12]	-.02	
	Extraversion	0.01	0.04	[-0.07, 0.09]	.01	
	Openness	-0.01	0.05	[-0.11, 0.10]	-.01	
Step 3b	Conscientiousness * Self-reported Delinquency Friend	-0.01	0.05	[-0.11, 0.09]	-.01	.00
Step 3c	Emotional stability * Self-reported Delinquency Friend	0.06	0.08	[-0.09, 0.22]	.05	.00
Step 3a	Agreeableness * Self-reported Delinquency Friend	0.03	0.10	[-0.16, 0.22]	.02	.00
Step 3d	Extraversion * Self-reported Delinquency Friend	-0.08	0.06	[-0.20, 0.04]	-.07	.00
Step 3e	Openness * Self-reported Delinquency Friend	-0.05	0.06	[-0.18, 0.08]	-.04	.00

Note. Regression coefficients are coefficients upon first entry. T1 = Time 1; T2 = Time 2; *N* = 176.

^a the critical *p*-value for this path is .013 according to the FDR procedure, therefore this path is not significant.

[†] *p* < .10; * *p* < .05; ** *p* < .01; *** *p* < .001.

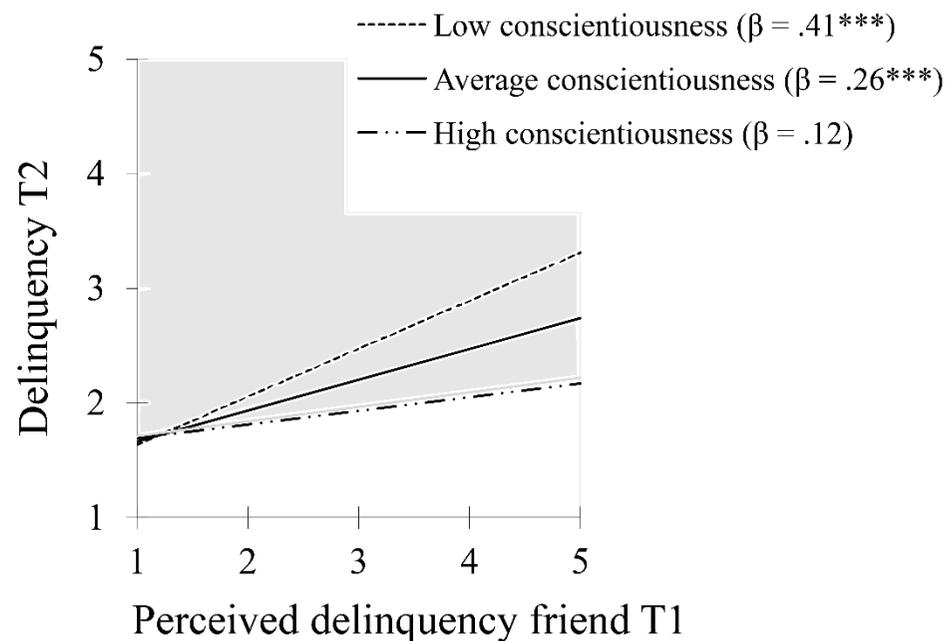


Figure 1. Simple slopes for the association between Perceived delinquency of friend at T1 and Adolescent delinquency at T2, computed at one standard deviation below the mean (low), the mean (average), and one standard deviation above the mean (high) of Conscientiousness. Shaded areas represent the range of moderator values for which the regression slopes are significant.