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## A longitudinal study of relations between attitudes and delinquent behavior in adolescents

### Abstract

This study investigated the relations between adolescents' attitudes toward delinquent behavior and actual delinquent behavior. In a study among 550 adolescents, interviewed 3 times during a period of 6 years, results indicated that for those who are just starting delinquent behavior, it is mainly attitudes that influence behavior. Yet for those who have experienced delinquent behavior, it is behavior that influences attitudes. These findings showed that relationships between attitudes and delinquent behaviors should be examined with longitudinal data to establish insight into directionality and causality.

Youth delinquency is a focus of considerable attention in the Netherlands. The media regularly report on gangs that terrorize the neighborhood in major cities and youths who destroy public property or create a disturbance on nights out. The government is increasingly concentrating on the prevention of youth crime. Besides policy measures for judicial authorities and the police, there are publicity campaigns aimed at making adolescents and those around them (e.g., parents, family, teachers) aware of their attitude and opinions about youth delinquency. However, intensive and expensive attempts to change attitudes are useful only if the resulting changes in adolescents' attitudes are related to the actual criminal behavior.

It is not sufficient simply to demonstrate that there is a correlation between attitudes and delinquent behavior because the cause of the correlation may be either that (a) people who have positive attitudes toward delinquency will also behave in a more delinquent way or (b) people who behave in a delinquent way will justify or excuse their behavior by developing a more positive attitude to youth delinquency. A third possibility is that both these mechanisms are in operation (e.g., Stacy, Bentler, & Flay, 1994). Because cross-sectional research does not permit judgments about the direction of the attitude-behavior relation, longitudinal research is necessary.

Although many studies have examined the effects of attitudes on risky habits, such as smoking, drinking, and sexual behavior (see reviews by Conrad, Flay, & Hill, 1992; Kraus, 1995), only a few have explicitly examined "predictive precedence" (for exceptions see Aas, Leigh, Anderssen, & Jakobsen, 1998; Engels, Knibbe, & Drop, 1999; Stacy et al., 1994). Consequently, research into the effects of attitudes on behavior rarely includes investigation of the effects of behavior on attitudes. This turns out to be an important deficiency.

Stacy et al. (1994) analyzed longitudinal data from five studies concerning eating behavior, alcohol consumption, drunk driving, smoking, and marijuana use. They concluded that although there are strong cross-sectional correlations between attitudes and behavior, in none of the cases did attitudes exert a strong or consistent influence on changes in behavior. Within the field of criminology, a variety of prospective studies have investigated the relation between attitudes and delinquent behavior.

Menard and Huizinga (1994) found, in their study among 11- to 17-year-olds, that for most adolescents a decline in the belief that illegal behavior is wrong precedes actual illegal behavior and that this relation is robust in both sexes and in different age groups. In a study among 1,517 North American boys, Zhang, Loeber, and Stouthamer-Loeber (1997) reported that, in boys aged 10 to 12 years, atti-

tudes had an effect on future delinquent behavior. In a study among 141 Canadian federally incarcerated offenders, Simourd and Van de Ven (1999) found that attitudes were significantly correlated with delinquent behavior and had some predictive value for recidivism. From these studies, it can be inferred that attitudes have a weak but consistent influence on future delinquent behavior.

Based on cognitive dissonance theory, one might expect that where there is a discrepancy between attitudes and behavior, people will tend to reduce this incongruity by changing either the cognitions or the behavior (Festinger, 1957). With respect to behavior that is stable and scarcely open to change, Bem (1972) hypothesized that the behavior influences and reinforces the attitudes rather than attitudes influencing behavior. In the case of habitual behavior, there is perhaps not much space left for the influence of attitudes. If people's behavioral patterns are not open to change, there is little space for attitudes to predict behavior. The direction of attitude-behavior correlations thus depends on the respondent's experience with the behavior (Eagly & Chaiken, 1993).

It was expected that in young people who have not yet become delinquent, attitudes will predict the start of delinquent behavior. By contrast, the expectation for the group of young people who started delinquent behavior early in adolescence, and continue that behavior until young adulthood, is attitudes will have little or no influence on the continuation of delinquent behavior. The expectation here is rather that continuation of delinquent behavior influences attitudes.

The central issue in the current study is whether the longitudinal relations between attitudes and behavior are different for young people who are just starting delinquent behavior from those who are experienced in delinquency. Data were analyzed from 550 adolescents who were interviewed three times during a period of 6 years. Structural models were used to test the reciprocal relations between attitudes and delinquent behavior.

### *Method*

The data were taken from the longitudinal study Utrecht Study of Adolescent Development (Meeus & 't Hart, 1993). The central aims of the research project were to describe the development of personality and relations with parents and peers in adolescence and to examine psychosocial determinants of problem behaviors in adolescence. The first wave of data collection was conducted in 1991 with the selection of a national representative sample of 3,393 12- to 24-year-old adolescents from an existing panel of 10,000 households. Trained research assistants interviewed respondents at home. This was done to (a) ensure that adolescents filled out the forms on their own and (b) the assistant could answer possible questions about the forms. In addition, self-administered questionnaires were given by the research assistant, filled out by the respondent, and sent back to the university. These self-report questionnaires were employed for assessing concepts that may be difficult to answer in the presence of a research assistant (e.g., delinquency, emotional problems). The second wave took place in 1994, and the third wave in 1997 with identical administration procedures as the first wave.

In total, 3,393 young people aged 12 to 24 years took part in the first measurement; 1,966 (58%) in the second, and 1,545 (46%) in the third. For the current study, data from the group aged 12 to 16 years at Time 1 (T1) was used. In this age group data concerning delinquent behavior and attitudes from 550 individuals, 244 boys (44%) and 306 girls (56%), was used. The composition by age was 92 (17%) respondents aged 12 years, 116 (21%) aged 13 years, 103 (19%) aged 14 years, 122 (22%) aged 15 years, and 117 (21%) aged 16 years. The mean age was 14.10 ( $SD = 1.4$ ; for more background information see Luijpers, 2000; Meeus & 't Hart, 1993). All adolescents were enrolled in, a form of secondary education. Of the students, 20% ( $n = 110$ ) reported being Catholic, 20% ( $n = 220$ ) Protestant, 3% ( $n = 17$ ) had a different religion, and 57% ( $n = 203$ ) reported to have no religion. Furthermore 12% ( $n = 66$ ) of the sample attended a church weekly, 19% ( $n = 105$ ) less frequently, and 59% ( $n = 324$ ) never.

The representativeness of the sample at the first measurement was checked based on data from the Central Bureau of Statistics and the Ministry of Justice ('t Hart, 1992). The sample was found to be

representative with respect to age, province, degree of urbanization, religion, and church attendance. It should be noted, however, that no ethnic minority adolescents were involved in the study. A check then was made on possible selective dropout during the course of the research, because other studies have shown that young people with problematic behavior, such as skipping school, drug use, or delinquent behavior, are more inclined to drop out of longitudinal research (e.g., Ary & Biglan, 1988). Logistic regression analyses for possible selective dropout were conducted by Luijpers (2000) that revealed no appreciable differences between respondents and dropouts on the measures of attitudes and delinquent behavior.

**Table 1 Development of Attitudes and Delinquency Over Time (N = 550)**

	1991 (12 to 16 year old)	1994 (15 to 19 year old)	1997 (18 to 22 year old)
Delinquency	0.99 (1.56)	0.92 (1.41)	0.66 (1.08)
Attitude	0.33 (0.27)	0.35 (0.24)	0.30 (0.23)
<b>Starting delinquents</b> (n = 300, 55%)			
Delinquency	0 (0)	0.56 (.96)	0.42 (0.79)
Attitude	0.26 (.23)	0.32 (.23)	0.25 (.21)
<b>Experienced delinquents</b> (n = 250, 45%)			
Delinquency	2.18 (1.66)	1.36 (1.71)	0.96 (1.28)
Attitude	0.42 (0.30)	0.40 (0.25)	0.37 (0.25)

*Note:* **Starting delinquents** refers to respondents who indicated at T1 (1991) that they had not engaged in any type of delinquent activities within the past 12 months. **Experienced delinquents** are those respondents who indicated at T1 engaged in one or more delinquent activities with the past 12 months. Standard deviation in parentheses. In all cases, significant ( $p < .001$ ) differences in attitudes and delinquency between starting delinquents and experienced delinquents were found.

## Measures

In the current study, delinquent behavior was defined as actions that make others (potential) victims and are publicly prohibited by some form of central authority (Luijpers, 2000; Table 1). Very few respondents exhibited seriously delinquent behavior, such as sexual offenses and serious violent offenses. Most of the delinquent behaviors involved minor offenses (petty crime).

Delinquent behavior was measured by asking respondents about 21 criminal acts, ranging from fare dodging on public transportation to minor forms of violence. The questions concerned violent offenses (“Have you ever threatened someone with a weapon or threatened to beat him or her up?”), vandalism (“Have you ever defaced walls, buses, bus shelters, etc., with felt pens or spray cans?”), and property offenses (“Have you ever bought something that you knew was stolen?”). The respondents were asked to state for each item whether they had committed that act at anytime during the past year. The response categories were no (coded as 0) and once or more than once (1). The scores of the 21 individual items then were summed. Therefore, the higher the score, the more criminal acts that respondent had committed. For details of this scale, see ‘t Hart (1994) and Luijpers (2000).

The adolescents’ attitudes toward delinquent behavior were measured with 18 items relating to delinquent behavior involving objects and people (Landsheer & ‘t Hart, 1995, 1999; Landsheer, ‘t Hart, & Kox 1994). Respondents were asked, “Imagine that you see a young person doing the following things. What would you think about it?” The response options were the following: I would think it was

bad (coded as 0), I wouldn't care (1), and I would think it was good (2). Example items were "A young person deliberately injures a stranger with a knife," "A young person deliberately damages someone else's motorbike," and "A young person sells something that you know was stolen." The internal consistency was very high across all three measurements, namely .87 at T1, .89 at T2, and .91 at T3. The scores on the attitude scale then were summed to give a total score (which was then divided by the number of items to retain reference to the original scale). For more information about this instrument, see Landsheer & 't Hart (1994, 1999) and Landsheer et al. (1994).

### Statistical analyses

First, the means and standard deviations of attitudes and behavior at the three times were calculated to investigate the changes in the variables over time and the distribution of the measures at the three times. The analyses were carried out for the total group, for the group of adolescents who exhibited no delinquent behavior at the first measurement (starting delinquents), and for the group of adolescents who had committed one or more delinquent acts at the first measurement (experienced delinquents). Although it must be said that someone who has committed one offense during the past year cannot actually be regarded as a juvenile delinquent, this system of labeling was nonetheless chosen. Moreover, it does not mean that a respondent who falls into the group experienced delinquents is actually delinquent throughout the entire period of adolescence. "Experienced" refers expressly to the behavior at the first measurement in early or mid-adolescence. The correlations for the model variables then were calculated.

The longitudinal relations between attitudes and behavior were tested using LISREL 8 (Jöreskog & Sörbom, 1993). Covariance matrices of the scales at the interval level were used as input matrices. The models contained latent constructs that were always measured with one observed variable. The initial structural model contained the reciprocal longitudinal effects of attitudes and behavior. It also included stability coefficients, where attitudes at T1 predicted the successive attitudes at T2 and attitudes at T2 predicted attitudes at T3, and delinquent behavior at T1 predicted behavior at T2 and behavior at T2 predicted behavior at T3. The initial model for the group of starting delinquents did not contain the variable behavior T1, because this obviously has no variance. The initial model for the group that did have experience with delinquent behavior at T1 contained all six variables.

Covariance models were estimated and fitted using the generalized likelihood method. This method was used because of its robustness in the case of nonnormal distributions. The delinquent behavior variables, in particular, showed a skewed distribution. The first model was estimated with only the theoretically hypothesized paths, which means estimation of the stability coefficients between delinquency and attitudes as well as estimation of the cross-lagged paths between delinquency and attitudes over time. If necessary, a model was adjusted by adding significant parameters (i.e., longitudinal paths or correlations between residues) when these were indicated by the so-called modification indicators. A model can be simplified by leaving out parameters if they are not significant. The fit of the model was evaluated by the  $\chi^2$ , the Normed Fit Index (NFI; Bentler-Bonett index), Non-Normed Fit Index (NNFI; Tucker-Lewis index), and the standardized root mean square residual (SRMR).

## Results

### *Changes in delinquent behavior and attitudes*

Table 1 shows the means and standard deviations of the model variables. The criminal behavior of the young people in the total group decreased with time, especially at the last measurement. When the respondents were aged 18 to 22 years, a decrease could be seen in the number of offenses. This is also evident in the percentage of young people reporting two or more offenses: 13% ( $n = 72$ ) at T1 (12- to 16-year-olds), 10% ( $n = 55$ ) at T2 (15- to 19-year-olds), and 7% ( $n = 39$ ) at T3 (18- to 22-year-olds). These

data also demonstrate the highly skewed distribution of delinquent behavior. Most of the young people stated that during the past year they had committed no offenses or only one offense. Moreover, most of them held a rejecting and negative attitude to delinquent behavior. Only a small number of respondents held a decidedly positive attitude to delinquent behavior.

The separate data for the groups of starting delinquents and experienced delinquents (see also Table 1) indicate that young people who had committed an offense in early adolescence held a less negative attitude toward youth crime and still held it 3 and 6 years later. In addition, the difference in delinquent behavior observed at the first measurement was also found to persist. The group who committed offenses when aged 12 to 16 years exhibited more delinquent behavior later in adolescence (in all  $t$  tests,  $ps < .001$ ).<sup>1</sup>

When a distinction was made according to sex (not shown in tables), it was found at all three times boys committed more offenses and also had a less negative attitude toward delinquent behavior than girls. Although differences in means do not in themselves indicate that the structural models also will be different for boys and girls (see Rowe, Vazsonyi, & Flannery, 1994), it seemed advisable to investigate the extent to which certain associations are sex specific. Multiple regression analyses were used to investigate whether the observed effects were different for boys and girls but found no appreciable differences in the direction or strength of the associations.

#### *Correlations between attitudes and behavior*

The correlations between attitudes and behavior at the three times are shown in Table 2. For the group of starting delinquents, attitudes were found to correlate moderately to strongly with one another over time ( $r$ s between .27 and .55,  $p < .001$ ). Furthermore, criminal behavior at T2 was related to behavior at T3. The cross-sectional correlations between behavior and attitudes were .19 (T2) and .21 (T3),  $p < .001$ . With regard to the cross-lagged paths, it was found the attitudes of starting delinquents were related to behavior 3 years later (from T1 to T2,  $r = .15$ ,  $p < .01$ ; from T2 to T3,  $r = .17$ ,  $p < .001$ ). No relationship was found between delinquent behavior at T2 and attitudes at T3.

For the group of experienced delinquents, a strong correlation was found between delinquent behaviors at the three time periods ( $r$ s between .35 and .42,  $p < .001$ ). Attitudes toward delinquent behavior also correlated quite strongly over time ( $r$ s between .31 and .42,  $p < .001$ ). The cross-sectional correlations between attitudes and behavior were similar at the three times, .26, .25, and .16, respectively. There was no association between attitudes at T1 and delinquent behavior at T2, although there was a slight association between attitudes at T2 and behavior at T3,  $r = .15$ ,  $p < .05$ . The correlations between delinquent behavior at T1 and T2 and attitudes at T2 and T3 were in both cases significant (.15 and .23,  $p < .01$ , respectively).

#### *Structural model for respondents exhibiting no delinquent behavior at T1*

The initial model fitted the data well,  $\chi^2(2, N = 330) = 2.96$ ,  $ns$ , NFI = .99, NNFI = .98, SRMR = .01. In an adjusted model, the nonsignificant path between delinquent behavior at T2 and attitudes at T3 was left out, which resulted in the final model,  $\chi^2(3, N = 330) = 2.97$ ,  $ns$ , NFI = .99, NNFI = 1.00, RMR = .01 (Figure 1). The findings indicate that there are strong correlations between the attitude measures at the three times. Young people who at a certain point in adolescence hold negative attitudes toward youth crime also tend to retain these opinions later in adolescence. For the young people who showed no delin-

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1 The differences in delinquency between the groups can perhaps be explained by differences in average age. A  $t$  test revealed a marginal age difference, with the average age of the group of nondelinquents at the time of the first measurement being 14.0 years ( $SD = 1.4$ ) and the group of delinquents being 14.3 years ( $SD = 1.5$ ),  $t(548) = 2.63$ ,  $p < .01$ .

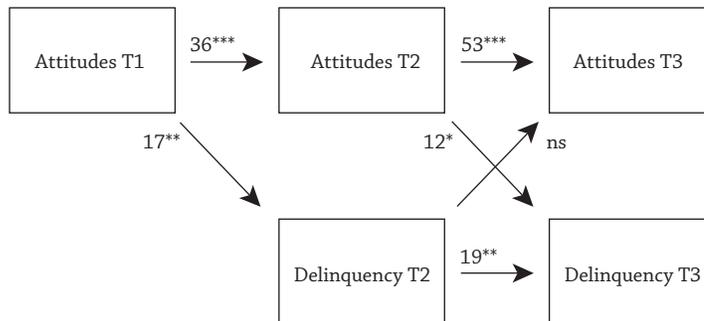
**Table 2 Cross-Sectional and Longitudinal Associations Between Attitudes and Delinquent Behavior for Adolescents Who Were Involved in Delinquency at T1 and Adolescents Who Were Not**

	<i>Delinquency</i>			<i>Attitude</i>		
	<i>T1</i>	<i>T2</i>	<i>T3</i>	<i>T1</i>	<i>T2</i>	<i>T3</i>
Delinquency T1	–	–	–	–	–	–
Delinquency T2	<b>.37***</b>	–	<b>.20***</b>	<b>.15**</b>	<b>.19***</b>	<b>.10</b>
Delinquency T3	<b>.35***</b>	<b>.42***</b>	–	<b>.07</b>	<b>.17***</b>	<b>.21***</b>
Attitude T1	<b>.26***</b>	<b>.05</b>	<b>.02</b>	–	<b>.38***</b>	<b>.27***</b>
Attitude T2	<b>.15*</b>	<b>.25***</b>	<b>.15*</b>	<b>.31***</b>	–	<b>.55***</b>
Attitude T3	<b>.19**</b>	<b>.23***</b>	<b>.16**</b>	<b>.37***</b>	<b>.42***</b>	–

Note: T1 = first assessment in 1991, T2 = second assessment in 1994, T3 = third assessment in 1997. Correlations for respondents who were not engaged in delinquency at T1 (*n* = 300) above the diagonal and for respondents who engaged in one or more delinquent acts at T1 (*n* = 250) below the diagonal. Cross-lagged paths in bold.

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

**Figure 1 Structural Model for Longitudinal Associations Between Attitudes and Delinquency for the Sample of Adolescents Who Were Not Engaged in Delinquency at T1. Parameters are Standardized Effects**



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

quent behavior at the first measurement, behavior at T2 was found to have an affect on delinquent behavior at T3.

Furthermore, for the group who reported no experience with crime, attitudes toward delinquency were found to have predictive value for changes in delinquent behavior during the period of adolescence.<sup>2</sup> Between early and midadolescence and between mid- and late adolescence, the changes were related to the attitudes toward delinquency. However, there was no effect of delinquent behavior at T2 on attitudes measured at T1. Based on these data, it is not possible to say that the positive or negative experiences of delinquent behavior gained by the adolescents (between T1 and T2) have an influence on the changes in attitudes between T2 and T3.

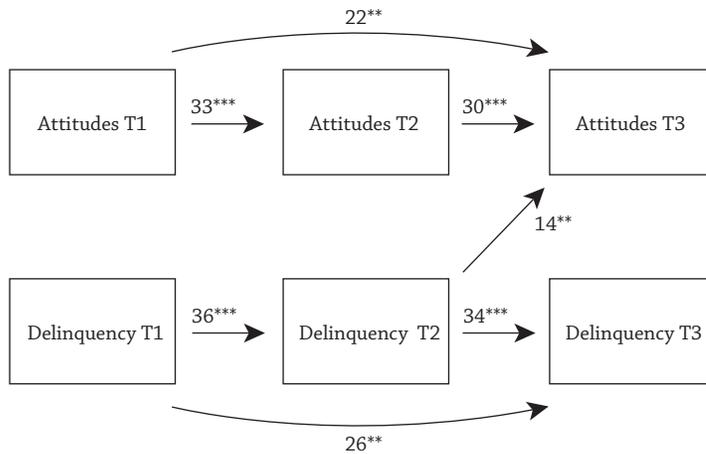
2 The age range of our sample is still quite wide (12 to 16 years). Additional analyses were conducted to investigate whether differences in effects are found if a distinction is made according to age. Regression analyses did not indicate any substantial differences in findings for the group aged 12 to 14 years and the group aged 15 to 16 years.

Structural model for respondents exhibiting delinquent behavior at T1

The initial model was not a good fit,  $\chi^2(4, N= 250) = 30.45, p < .01, NFI = .90, NNFI = .67, SRMR = .11$ . After leaving out three nonsignificant paths (between attitudes at T1 and behavior at T2, between attitude at T2 and behavior at T3, and between behavior at T1 and attitude at T2) and adding two significant paths (between behavior at T1 and behavior at T3, and between attitude at T1 and attitude at T3), a model with a good fit was obtained,  $\chi^2(5, N = 250) 4.25, ns, NFI = .99, NNFI = 1.00, SRMR = .02$ . The standardized effects of this final model are shown in Figure 2.

It can be seen that apart from the strong self-correlations found for attitudes toward delinquency and for delinquent behavior, no effects were found of attitudes on changes in delinquent behavior. This means that within the group of adolescents exhibiting delinquent behavior in early adolescence, attitudes toward delinquent behavior did not influence their own behavior. However, the experiences they gained with delinquent behavior did determine their attitude toward youth crime at a later time: Young people exhibiting more delinquent behavior were more strongly of the opinion that delinquent behavior is permissible.

**Figure 2 Structural Model for Longitudinal Associations Between Attitudes and Delinquency for the Sample of Adolescents Who Were Engaged in Delinquency at T1. Parameters are Standardized Effects**



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

**Discussion**

The current study indicates that in research on attitude-behavior relations, a distinction should be made according to the previous experiences and specific behavior of the individuals themselves. Longitudinal relations between attitudes and delinquent behavior were found to be different for starting delinquents and for experienced delinquents. Before delinquent behavior has actually started, the attitude toward this behavior was found to be a strong predictor, whereas when delinquent acts already have been committed, attitudes were found to have no influence on whether delinquent behavior continues or stops. On the contrary, in this last group delinquent behavior was notably found to have an influence on change in attitudes. This corresponds with the findings of Aas et al. (1998), Menard and Huizinga (1994), and Stacy et al. (1994).

The results of the current study demonstrated that in cross-sectional studies it is not possible to draw conclusions about the direction of attitude-behavior relations, and that in longitudinal studies, where changes are predicted, it must be clear what changes (e.g., starting or continuing) are involved. These findings suggest that these simple attitude-behavior links will be useful mainly in the case of young people who have yet to exhibit delinquent behavior, but not in the case of those who are already delinquent. Only data in which trajectories of the delinquent behaviors of young people are traced can accurate conclusions on the direction of the effects be drawn. In particular, studies with large representative samples of youth can provide insight into these trajectories of initiation and escalation of delinquent behaviors.

It was expected that young people would adjust their attitudes or their behavior if a discrepancy existed between what they think and what they actually do. This would mean that based on dissonance theory one might expect that young people who start and then continue delinquent behavior would adjust their attitudes. The current study did not, in fact, offer any support for this, although in the group of experienced delinquents support was found for dissonance reduction. Delinquent youth who continued such behavior adjusted their attitudes to their behavior.

The findings fit in well with Moffitt's (1993) paradigm concerning the differences in predictors for young people who are criminally active before the onset of the adolescent period and continue these activities during adolescence ("life-course persistent antisocial behavior") and young people who start delinquent behavior during the adolescent period and restrict this behavior to that particular phase of life ("adolescence-limited delinquency"). The current study indicates that in the case of the first group, attitudes toward criminal behavior no longer play a part in the continuation of habits, whereas in the case of the second group, attitudes do have an impact on the delinquent behavior. Moreover, Moffitt's ideas also provide an explanation for the differences in correlations between delinquent behaviors at different times. The low stability of criminal behavior in the group of starting delinquents indicates that many in this group cease such behavior between T2 and T3. The stronger auto-correlations found in the group of experienced delinquents indicate that they are probably persistent in their behavior.

The strongest effects were found between measurements of the same construct at different times. In particular, the attitudes of starting delinquents and experienced delinquents were found to be relatively stable. In contrast, the cross-lagged effects were relatively small. In the model for starting delinquents, attitudes at T1 and T2 predicted a maximum of 4% of the variance in future behavior. There is a discussion in the literature about how variances with a low degree of explanation should be interpreted (Kraus, 1995).

On one hand, there is the conclusion that 96% of the variance in future criminal behavior is not predicted by attitudes, and that our model is not very effective in predicting criminal behavior. On the other hand, other longitudinal studies of adolescents have shown that even when additional concepts (besides previous behavior) are included to explain future behavior, several months or years later, no more than 10% can be explained (e.g., Engels et al., 1999). There is evidently a ceiling effect for adequate predictions, and it is not feasible to aim for explained variances of 50% to 60% in the prediction of changes in adolescent problem behaviors.

According to Ajzen (1985), the period between the measurements of attitude and behavior must be as short as possible to produce adequate predictions. Yet, the practical utility of an explanatory model that is capable of predicting behavior only in the very short term is limited (Randall & Wolff 1994). Three years between measurements is, however, a long period. Especially during the turbulent adolescent period, one might wonder whether the lack of information about what happens between measurements could, in fact, influence the precision of predictions. It would be useful to replicate this research with a larger sample (to obtain sufficient variance in the behavior measures) and with periods of 1 year between the measurements.

There are at least two possible explanations for why the cross-sectional associations between attitudes and delinquent behavior were not high and were perhaps lower than might be expected on the

basis of previous studies (Menard & Huizinga, 1994; Zhang et al., 1997). The first is that the correspondence principle (Ajzen, 1985) is only partially applied. The specific offenses or norm violations are not entirely the same in the measures of attitudes and behavior. Sometimes the attitude about a particular offense is investigated but not the behavior, or vice versa. A second explanation concerns the measurement of delinquent behavior. It is possible that the use of dichotomous response categories (i.e., have or have not committed an offense) gives less accurate information about delinquent behavior during the past year than if the adolescents were asked about the frequency of such behavior. Another question is whether a topic such as delinquency might not lead to socially desirable responses. The data set was examined to check the extent to which this plays apart, and no indications of its relevance were found (Luijpers, 2000).

Another limitation is that the choice of a representative sample of ethnic majority adolescents might have resulted in most of the respondents being fairly "well behaved" and having committed not only very few serious offenses but also none at all. Besides giving limited variance in the behavior measures, this also does not answer the question of whether, for example, in the case of young people who have been punished for a serious offense, there might not be a negative relation between behavior and attitudes. After all, the experience of strong negative consequences also can result in a less-positive attitude toward delinquency. Moreover, we did not ask respondents to give an estimate of the importance they attached to a certain opinion. Thus, only the beliefs and not the evaluations of attitudes were measured. Although it is not clear whether this method results in better predictions (Eagly & Chaiken, 1993; Lechner, 1998), it would be useful to investigate the issue of adding evaluations in future research.

In sum, the current study illustrates that it is important in the examination of effects between attitudes and delinquency to distinguish between those who are not involved in delinquency and those who are involved. Hence, these findings show that for those who are not involved in delinquent activities in early adolescence, attitudes affect their future engagement in delinquent activities whereas for those who are already involved, their behaviors more strongly affect their attitudes.

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