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Sanctions, short-term mindsets, and delinquency: Reverse causality in a sample of high school youth

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Purpose. We question the commonly assumed view of a fixed causal ordering between self-control, delinquency, and sanctions and test the hypothesis that experiencing sanctions may reduce levels of self-control, thereby increasing the risk of future delinquent behaviour. As a subsidiary goal, we argue for a parsimonious view of self-control that is limited to its key components, risk-taking, and impulsivity.

Methods. We use three waves of data from the Zurich Project on the Social Development from Childhood into Adulthood (z-proso), an ongoing prospective longitudinal study of Swiss urban youth (N = 1,197), and include police contacts and school sanctions as predictors of delinquency. We test our hypothesis using path analysis and control for a series of potential confounders, including prior levels of self-control and earlier delinquency.

Results. In line with our hypothesis, the results indicate that sanctioning reduces levels of self-control, net of prior levels of self-control, and earlier delinquency and that self-control mediates the relation between sanctioning and subsequent delinquency.

Conclusions. We conclude that the relation between self-control and crime may be bi- rather than unidirectional with sanctions reducing levels of self-control, which in turn contributes to criminal behaviour. Implications for theory are discussed.

Short-sightedness, or the lack of consideration of delayed consequences, pervades thinking about crime and criminal justice. It is reflected by several dispositions related to crime, including its most established individual-level correlate, self-control (Gottfredson & Hirschi, 1990), and is also implied in the principal theory of punishment, deterrence. Both self-control and deterrence theory are premised on the belief that crime results from a failure to consider its costs, which tend to be delayed compared with its benefits (Nagin & Pogarsky, 2004). Whereas self-control theory views this failure as a relatively stable individual propensity, deterrence theory assumes that punishment can motivate offenders to abstain from crime. Both perspectives dictate a fixed causal ordering of

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events according to which short-sightedness leads to the choice for crime and, in case of apprehension, results in punishment.

In this article, we contend that this portrayal may be incomplete. Rather than (low) self-control always preceding criminal behaviour and incurring subsequent sanctions, we theorize that experiencing sanctions may also reduce self-control, thereby increasing the probability of future criminal behaviour. As a subsidiary goal, we argue for a more parsimonious view of self-control. Instead of a composite construct consisting of a series of distinctive elements (Gottfredson & Hirschi, 1990; Grasmick, Tittle, Bursik, & Arneklev, 1993), we argue for a restrictive view revolving around its two core components, impulsivity and risk-seeking, which best align with its definition and are also the construct's main drivers of delinquent behaviour.

Self-control and the general theory of crime

According to Gottfredson and Hirschi (1990), individuals low in self-control tend to place little weight on the, generally long term, consequences of their criminal actions and to overvalue the, mostly immediate, benefits. This tendency is argued to underlie all types of crime and to be established during childhood. Monitoring and consistent disciplining are the key parental actions instilling self-control, and after the formative early childhood years, neither parenting nor other social factors have any significant influence on it. In the words of Hirschi & Gottfredson, 1994, p. 19), 'our theory asserts that state sanctions are irrelevant to the control of deviant behaviour, whether serious or trivial'.

An increasing body of work suggests that self-control may be less stable than assumed and that a substantial minority of individuals shows considerable change in it over time (e.g., Burt, Simons, & Simons, 2006; Burt, Sweeten, & Simons, 2014; Hay & Forrest, 2006; Murray, Obsuth, Eisner, & Ribeaud, 2016; Na & Paternoster, 2012). If self-control demonstrates instability over time, it begs the question what factors are causative of its development. In recent years, several factors have been identified, including parenting practices beyond early childhood (8–10 years; e.g., Burt *et al.*, 2006; Hay, 2001; Hay & Forrest, 2006) and average levels of self-control of peers (Meldrum, Young, & Weerman, 2012). In a recent study, Clinkinbeard, Barnum, and Rhodes (2017) found that delinquency during adolescence influences self-control during early adulthood. In the present study, we add to this literature and explore the role of sanctions as influences on people's levels of self-control. Prior to expounding on why sanctions are likely to affect levels of self-control, we first make the case for a narrow(er) view of self-control.

The case for a narrow(er) view of self-control

The definition of (low) self-control by Gottfredson and Hirschi as the disregard for long-term consequences differs from the broad way in which they describe its nature, that is as being composed of six different elements (risk-seeking, impulsivity, a preference for physical activities, self-centredness, temper, and a preference for simple tasks). Most common measures of self-control in criminology are based on this broad description rather than on its definition. Indeed, only two elements, impulsivity and risk-seeking, in the description align directly with its definition as the disregard for the long-term consequences (Pfefferbaum & Wood, 1994; Ward, Nobles, & Fox, 2015). Incorporating constructs outside of this definition of self-control 'contaminates' measures of self-control with other, related yet different, constructs (Malouf *et al.*, 2014).

The broad description also deviates from views of self-control common in psychological research (e.g., De Vries, & Van Gelder, 2013; De Ridder, Lensvelt-Mulders, Finkenauer, Stok & Baumeister, 2012; Duckworth & Steinberg, 2015; Tangney, Baumeister, & Boone, 2004). For example, Duckworth and Steinberg (2015, p. 32) describe self-control as 'actions aligned with valued, longer term goals in the face of conflicting impulses to seek immediate gratification'. Baumeister, Vohs, and Tice (2007, p. 351) see self-control as the capacity for altering one's own responses, especially to bring them into line with standards such as ideals, values, morals, and social expectations, and to support the pursuit of long-term goals. Although not identical, these descriptions coincide on a view of (low) self-control as a short-term mindset in which immediate gratification takes precedence over the pursuit of long-term goals.

De Vries, De Vries, and Born (2011) mention three important advantages of using narrower traits over broader ones. First, due to their ability to explain more variance, outcomes may be predicted with greater accuracy by narrow traits. Second, the summation of narrow trait scales to obtain a broad domain scale may inadvertently mask relations between narrow traits and outcome criteria, as differential effects of various elements may cancel each other out. Third, narrow traits make it easier to conceptually understand and interpret the relations between a trait and an outcome (De Vries *et al.*, 2011, p. 346).

In support of the narrow view, broad measures of self-control, such as the Grasmick *et al.* (1993) scale, have been found to be associated with facets belonging to different and independent dimensions of personality (De Vries, & Van Gelder, 2013; Marcus, 2003), and various studies have shown that the factor structure of the scale does not map neatly onto the six constituent elements defined by Gottfredson and Hirschi (1990; e.g., DeLisi, Hochstetler, & Murphy, 2003; Longshore, Turner Rand, & Stein, 1996; Ward *et al.*, 2015). Therefore, aside from a disconnect between the definition of self-control and its common operationalizations, the broad view of self-control gives rise to measurement problems.

Another reason for favouring a narrower view is predictive power. Most research suggests that of all six elements, risk-seeking, directly followed by impulsivity, is the strongest predictor (Arneklev, Grasmick, Tittle, & Bursik, 1993; Ribeaud & Eisner, 2006; DeLisi *et al.*, 2003; Longshore *et al.*, 1996; Ward *et al.*, 2015; Wood, Pfefferbaum, & Arneklev, 1993). Furthermore, this research shows that impulsivity is difficult to separate from a broad measure of self-control (Arneklev et al., 1993; Ribeaud & Eisner, 2006; Ward *et al.*, 2015).

Specific deterrence

Like self-control theory, specific deterrence emphasizes the role of short-term thinking in crime causation. A main difference is that whereas self-control theory posits that short-term thinking is unaffected by external events after childhood, deterrence is premised precisely on the idea that punishments discourage future criminal acts by instilling an understanding of the negative consequences of such acts (Wilson & Herrnstein, 1985; Zimring & Hawkins, 1973).

However, empirical evidence for specific deterrence is equivocal at best, with many studies finding that sanctions either have no effect or even a criminogenic effect on future offending (e.g., Bernburg & Krohn 2003; Nagin & Snodgrass, 2013; Piquero, Paternoster, Pogarsky, & Loughran, 2011; Van Gelder, Averdijk, Ribaud, & Eisner, 2018). Studies conducted in the United States, Germany, and the Netherlands have generated similar findings comparing more punishment-oriented approaches and more lenient, diversion-focused systems (Huizinga, Schumann, Ehret, & Elliott, 2003; Nieuwbeerta, Nagin, & Blokland, 2009). Experimental studies also regularly fail to support deterrence theory

assumptions, finding that punishment may encourage rather than discourage offending (e.g., Gneezy & Rustichini, 2000). Furthermore, several studies have shown that school sanctioning either has no effect or even a positive effect on subsequent delinquency (Hemphill, Toumbourou, Herrenkohl, McMorris, & Catalano, 2006; Kaplan & Damphousse, 1997; Maimon, Antonaccio, & French, 2012; Valdebenito, Eisner, Farrington, Ttofi, & Sutherland, 2015).

Can sanctions reduce self-control?

We propose that one possible explanation for the lack of deterrent and sometimes even amplifying effect of sanctions on crime is that punishment may reduce self-control or, stated differently, trigger short-term mindsets. We theorize that sanctions can prompt a series of processes and consequences that negatively impact levels of self-control. As will be argued below, this tendency may also be an important shared mechanism of various theoretical perspectives that challenge the specific deterrence thesis.

For one thing, a small but growing literature that investigates sanctioning practices, including imprisonment and police contact, suggests they are often perceived as disrespectful and unfair by the people who are subjected to them and can lead to alienation from society and association with deviant peers (Leiber, Nalla, & Farnworth, 1998; Nagin, 2013; Nivette, Eisner, Malti, & Ribeaud, 2014; Pogrebin & Dodge, 2001; Raaijmakers, Loughran, Keijser, Nieuwbeerta, & Dirkzwager, 2016). Furthermore, sanctions, particularly those that are perceived as unfair, are likely to trigger feelings of anger and resentment (Agnew, 1992; Braithwaite, 1989; Piquero, Gomez-Smith, & Langton, 2004; Sherman, 1993; Tyler, 2003), which are known to lead to risky and impulsive behaviour. Indeed, one of the most defining properties of anger is a shortening of one's temporal horizon to the immediate present and a crowding out of long-term considerations (De Vries, & Van Gelder, 2013; Fessler, Pillsworth, & Flamson, 2004; Loewenstein, 1996).

According to labelling theory, sanctioning may implicate a process whereby rule breakers receive discrediting labels such as 'criminal' or 'deviant' (Becker, 1963; Chiricos, Barrick, Bales, & Bontrager, 2007; Wiley, Slocum, & Esbensen, 2013). According to the theory, 'deviance is *not* a quality of the act the person commits, but rather a consequence of the application by others of rules and sanctions to an offender' (Becker, 1963, p. 9). That is, an individual who is labelled as a criminal will tend to conform to the essential meaning of that judgement and is therefore likely to display future criminal behaviour. Labelling theory assumes that the potential escalating consequences of criminal labelling operate not only through the transformation of the identity of an offender (Chiricos *et al.*, 2007), but also through the structural impediments to, and exclusion from, the normal routines of everyday life and the resulting reduction of future opportunities and resources. Moreover, delinquent behaviour may lead to ostracism, rejection, and a loss of informal social ties (Sampson & Laub, 1995), and is also likely to reduce access to prosocial resources. In line with these assumptions, we contend that sanctions can reduce self-control by causing individuals to seek out, or be selected into, environments that encourage short-sighted behaviour. For example, having been sanctioned or in contact with the police has been shown to motivate self-selection into deviant peer groups (Bernburg, Krohn, & Rivera, 2006), which are known to reward risky and impulsive behaviour. Meldrum *et al.* (2012) argue that adolescents may adapt their own attitudes by observing how their peers talk about things such as taking risks, and efforts for the future, and the impulsive and risky behaviour of their peers. Indeed, as Albert and Steinberg (2011) observe, one of the best-documented predictors of adolescents' risky behaviour is the behaviour of their peers.

In short, sanctioning experiences, such as police contacts, expulsion from school, and public labelling of deviants, can increase the probability of future crime because such interventions can contribute to short-sightedness. That is, they reduce self-control, in direct and indirect ways, for example, by inadvertently increasing self-organization into delinquent peer groups, instilling feelings of anger, weakening social ties that could have provided restraint on criminal tendencies, promoting substance use, and cutting off access to conventional opportunities, such as legitimate jobs (Becker, 1963; Laub & Sampson 1993; Pager, 2003; Sherman, 1993). In spite of the divergent character of these factors, what they have in common is that they can encourage short-term mindsets at the expense of considering the future, which, in turn, as ample research bears out, affects delinquency.

The present study

Our thesis challenges both specific deterrence and the stability thesis of self-control theory. With respect to the latter, it suggests that environmental factors such as getting delinquent peers, dropping out of school, or being sanctioned may encourage short-term mindsets, and hence reduce levels of self-control. Recall that self-control theory assumes any observed correlation between environmental factors, and criminal behaviour is spurious rather than causal, due to the fact that they are all the result of low self-control (Gottfredson & Hirschi, 1990; Nagin & Paternoster, 2000). In contrast, we posit that such events and experiences are not just caused by low self-control, but that they can also impact on self-control. With respect to deterrence, our thesis explains the counterintuitive finding that sanctions regularly result in more rather than less delinquency and increasing their severity does not necessarily reduce crime.

We test our mediation hypothesis that sanctioning contributes to lower levels of self-control, which, in turn, predicts later delinquency using data from the Zurich Project on the Social Development from Childhood into Adulthood (Figure 1). Furthermore, we argue that the main drivers of this relation are the two subelements of self-control that align with its definition, that is, impulsivity and risk-seeking, and which are reflective of a short-term mindset. We focus on two different types of sanctions, police sanctions, and school sanctions, and, by way of robustness check, measure these through five slightly different variables. The latter was done to ensure that our results are not due to one

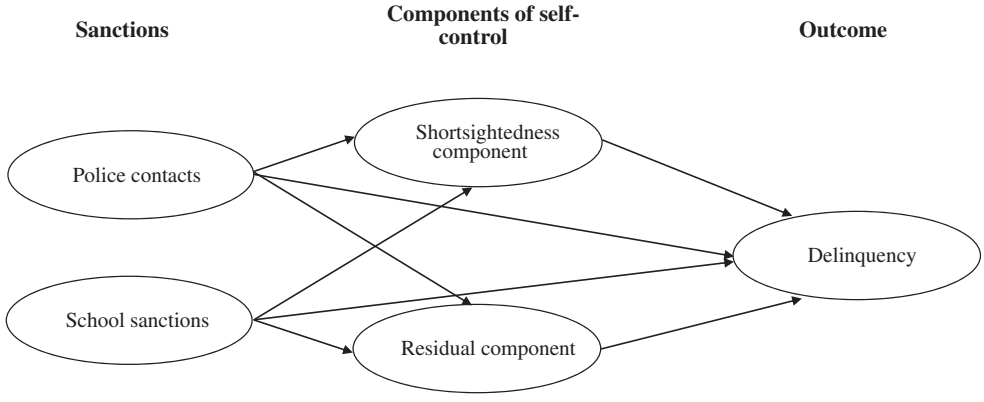

Figure 1. Hypothesized relations between sanctions, the short-sightedness component of self-control, the residual component of self-control, and delinquency.

particular variable but are, instead, robust to varying types of measurement. Furthermore, we control for prior levels of self-control and delinquency, thereby testing whether sanctions have a negative effect on self-control, *net* of previous levels of self-control, and delinquency.

Method

Participants

Data were drawn from the ongoing combined longitudinal and intervention study, the Zurich Project on the Social Development from Childhood into Adulthood (*z-proso*). The study's target population consisted of 2,520 first graders (age 7) in the city's 90 public primary schools. Using a cluster randomized sampling approach, the schools were classified by enrolment size and socio-economic background of the school district in order to minimize possible contamination or spillover effects between the interventions. A stratified sample of 56 schools was drawn. The 1,675 first graders in these schools formed the final sample.

Data for the present paper were drawn from the three most recent waves (waves 5, 6, and 7), because the main measures of interest were collected in these particular waves. At wave 5, when the mean participant age was 13.7 years (SD = 0.37), 82 per cent of the children from the original target sample participated. At wave 6, when the average age was 15.4 years (SD = 0.36), 86 per cent of the participants from the original target sample were still included. At wave 7, when the mean age was 17.4 years (SD = 0.37), participation from the original target sample was 78%. Paper and pencil questionnaires were completed in a classroom setting after school. Participants received an incentive worth the equivalent of US $30, US$50, and US$60 at each respective wave in exchange for their participation.

Measures

Delinquency

In waves 5 and 7, the participants self-reported the past-year prevalence of 14 different types of delinquency. The scale was adapted from Wetzels, Enzmann, Mecklenburg, and Pfeiffer (2001) and included stealing at home, stealing at school, shoplifting something worth more than $50, shoplifting something worth less than $50, vehicle theft, driving without a licence, burglary and stealing from a car, drug dealing, graffitiing, vandalism, carrying a weapon, threatening and extortion, robbery, and assault. We computed a total variety scale due to its high reliability and validity and lower skewness compared with frequency measures (Sweeten, 2012). In addition, variety scales are not compromised by high-frequency crime types of low seriousness (Bendixen, Inger, & Olweus, 2003).

Self-control

An adapted and abbreviated version of the self-control scale by Grasmick *et al.* (1993) was included in waves 5 and 6. Based on an analysis of the individual subdimensions, the scale excluded items measuring a preference for simple tasks (see Ribeaud & Eisner, 2006). Accordingly, five subdimensions were included using two items for each dimension: impulsivity (e.g., 'I often act on the spur of the moment without stopping to think'), risk-seeking (e.g., 'Sometimes I do dangerous things just for the fun of it'), volatile temper (e.g., 'I lose my temper pretty easily'), self-centredness (e.g., 'If the things I do upset people, it's

their problem not mine'), and preference for physical activities (e.g., 'I like to get out and do things more than I like to read or contemplate ideas'). Answer categories on a 4-point Likert scale ranged from 1 (false) to 4 (true). Because Cronbach's alpha can be biased for scales with a low number of items (Eisinga, Grotenhuis, & Pelzer, 2013), we used the mean interitem correlation to assess scale reliability (Briggs & Cheek, 1986; Clark & Watson, 1995). These were satisfactory with $r = .273$ at wave 5 and $r = .275$ at wave 6 for impulsivity; .418 at wave 5 and .403 at wave 6 for volatile temper; .278 at wave 5 and .291 at wave 6 for self-centredness; .558 at wave 5 and .543 at wave 6 for risk-seeking; and .274 at wave 5 and .304 at wave 6 for having a preference for physical activities. In accordance with our theoretical framework, the scales for impulsivity and risk-seeking were combined into a short-sightedness component of self-control ($r = .48$ at wave 5 and $r = .45$ at wave 6), whereas the scales for self-centredness, volatile temper, and preference for physical activities were combined into a residual component of self-control as these latter scales do not focus on the trade-off between immediate benefits and more long-term costs (average $r = .28$ at wave 5 and average $r = .24$ at wave 6).

Police contact

We included three measures for self-reported police contact. These were included in different instruments at wave 6 and concern somewhat different levels of severity and reference periods. We repeated the analyses across the three measures by way of robustness check. Regarding the first measure, follow-up items to each of the above 14 types of self-reported delinquency assessed the past-year prevalence of a police contact due to that type of delinquency. We constructed an overall prevalence score across all items. The second measure was part of a larger item battery on experiences with the police. The filter question at the start of this battery asked whether or not the youth had had contact with the police in the past 2 years and if so, why (e.g., as a witness and as a victim). We coded those cases where youths had had contact with the police as a perpetrator (for driving without a licence, assault, threatening and extortion, theft, drug dealing, vandalism, and graffitiing) and constructed a prevalence score on the basis of this coding. The third measure of police contact was derived from a Life Event Scale (LES) that assessed the prevalence of negative life events in the past 2 years. One item assessed whether the youth had been reported to and heard by the police.

School sanctions

We included two different measures for school sanctions, which were part of different survey instruments and which are both considered here by way of robustness check. For the first measure, participants reported whether in the past 2 years they had been punished by the school or had some other action taken against them for doing something forbidden (i.e., assaulting, threatening, blackmailing/extorting, or insulting another student or teacher at school, stealing at school, vandalism, graffitiing, consuming alcohol or drugs, truancy, or another rule violation). The second measure was derived from said LES of which one item assessed whether the youth had gotten an official written warning from school or had to go see the school principal because of his/her behaviour.

Control variables

Prior measures of delinquency and self-control were included to control for selection effects. In line with the Cambridge Quality Checklists (Murray, Farrington, & Eisner,

2009), these variables were measured in wave 5 to avoid the possibility that they might act as mediators. We also controlled for a number of demographic variables. Even though their inclusion can partial out shared variance with the main variables of interest, we deemed it necessary for the following reasons. First, we controlled for sex ('1' for males and '2' for females) due to its well-established association with delinquency (e.g., Moffitt, Caspi, Rutter, & Silva, 2001). Second, because of the multiethnic nature of our sample, we controlled for ethnicity (with '0' signifying at least one Swiss parent and '1' two non-Swiss parents), which is in line with prior analyses of the same data set (e.g., Averdijk, Van gelder, Eisner, & Ribeaud, 2016; Van Gelder, Averdijk, Eisner, & Ribaud, 2015). Finally, socio-economic status (SES) was included because a meta-analysis found that SES can be considered to be a robust correlate of antisocial behaviour (Piotrowska, Stride, Croft, & Rowe, 2015). SES was based on the caregiver's current profession (Elias and Birch 1994) and transformed into an International Occupational Status (ISEI) score, with higher scores indicating higher SES (Ganzeboom, De Graaf, & Treiman, 1992). The highest ISEI score of the two caregivers comprised the final variable. Summary statistics of all variables are displayed in Table 1.

Plan of analysis

In a first step, we estimated zero-order correlations to explore the bivariate relations between the key study variables. In the second step, we tested our hypothesis that self-control mediates the relation between sanctions and delinquency. More specifically, we expect that the short-sightedness component consisting of impulsivity and self-control but not the residual component consisting of the scales for self-centredness, volatile temper, and preference for physical activities operates as a mediator. To this end, we performed a mediation analysis in Mplus (Muthén & Muthén, 1998–2015). This analysis estimates both the direct pathways depicted in Figure 1 and the indirect pathways. The direct pathways cover the direct relation between the sanctions and the components of self-control; the direct relation between the sanctions and the outcome (i.e., delinquency); and the direct relation between the components of self-control and delinquency. The indirect pathways imply that part of the relation between sanctions and delinquency is due to the components of self-control. In other words, the mediation model tests whether sanctions predict the components of self-control, which in turn predict delinquency. Results were estimated using maximum likelihood with robust standard errors to account for deviations resulting from multivariate non-normality. In addition, standard errors were corrected for clustering within classes to avoid bias. Delinquency was analysed using a negative binomial model due to the count nature of its variety scale (Hilbe, 2011). Due to our large sample size and recent concerns about inflated type I error rates using bootstrap methods, we did not use them (Hayes & Scharkow, 2013; Koopman, Howe, Hollenbeck, & Sin, 2015).

We included all youths who had participated in all three waves (N = 1,197; 71.5% of the target sample). For these youths, 1% of all data points was missing. The data points were dealt with using robust full information maximum likelihood estimation (Enders, 2001; Enders & Bandalos, 2001; Larsen, 2011).

Results

Bivariate correlations

Table 1 displays summary statistics of the main study variables. In line with prior studies, there was a substantial correlation between the short-sightedness and residual

Table 1. Correlations and summary statistics of main study variables (N = 1,197)

Variables	1	2	3	4	5	6	7	8	*M*	*SD*
1. W6 short-sightedness component									2.28	0.55
2. W6 residual component	.55**								2.26	0.45
3. W6 police sanctions – measure from delinquency questionnaire	.18**	.17**							0.04	0.20
4. W6 police sanctions – measure from LES	.20**	.24**	.48**						0.08	0.27
5. W6 police sanctions – measure from questionnaire on experiences with the police	.14**	.18**	.67**	.60**					0.04	0.20
6. W6 school sanctions – measure from school sanctions questionnaire	.22**	.20**	.12**	.17**	.19**				0.21	0.41
7. W6 school sanctions – measure from LES	.20**	.19**	.21**	.29**	.26**	.49**			0.14	0.35
8. W7 delinquency	.29**	.21**	.18**	.33**	.18**	.26**	.29**		1.03	1.65
Control variables										
W5 short-sightedness component	.46**	.30**	.08**	.18**	.12**	.21**	.19**	.29**	2.21	0.59
W5 residual component	.33**	.44**	.10**	.19**	.14**	.23**	.17**	.22**	2.19	0.47
W5 delinquency	.23**	.23**	.19**	.30**	.23**	.28**	.26**	.43**	0.98	1.73
Sex	−.08**	−.05	−.05†	−.15**	−.10**	−.15**	−.16**	−.28**	1.50	0.50
Non-Swiss background	−.02	.06*	−.04	−.01	−.02	−.02	.01	−.04	0.49	0.50
SES	.03	−.08**	−.01	−.07*	−.03	.02	.00	.06†	46.71	19.44

LES, Life Event Scale; *M*, mean; *SD*, standard deviation.
$^{\dagger}p < .10$; *$p < .05$; and **$p < .01$ (two-tailed).

components of self-control. Both were also significantly related to police contacts and school sanctions. Sanctions, in turn, were related to increased delinquency rates. Although the different measures of police sanctions and the different measures of school sanctions correlated significantly with each other, the correlations indicate that they tap into different aspects of the sanctions in terms of severity and reference period. Furthermore, there were substantial correlations between the same variables over time (i.e., the wave 5 and 6 measures of self-control and the wave 5 and 7 measures of delinquency).

Mediation results

The results of the mediation analyses are displayed in Table 2 for police contacts and in Table 3 for school sanctions. In order to illustrate and clarify the results, the results of two of the five estimated models are also shown in Figure 2 (which displays the results for the first measure of police contacts [i.e., the first column in Table 2]) and Figure 3 (which displays the results for the first measure of school sanctions [i.e., the first column in Table 3]).

As can be seen in Table 2, all three measures of police contact significantly predicted short-sightedness. Moreover, as shown under 'Indirect Effects' in Table 2, short-sightedness mediated the effect of police contacts on delinquency. In other words, police contacts were associated with increased short-sightedness, which in turn was associated with higher delinquency. The same was not the case for the other subcomponents of self-control, which (although predicted by police contacts) were not significantly related to delinquency.

The results for school sanctions (Table 3) were similar to those for police contacts. Both measures of school sanctions significantly predicted both the short-sightedness and the residual component of self-control. As indicated by the indirect effect coefficients, school sanctions were associated with increased short-sightedness, which in turn was associated with higher delinquency. Similar to police contacts, no significant indirect effect emerged for the other subcomponents of self-control. In sum, in support of our hypothesis, increased short-sightedness explained part of the association between sanctions and later delinquency, controlling for a range of variables such as earlier delinquency, sex, SES, and prior levels of short-sightedness.

Although these results suggest support for our hypothesis, our mediation model was not entirely unambiguous because our measures for sanctions were collected at the same time-point as our self-control scale, namely at wave 6. We therefore performed additional tests that included measures for sanctions collected at wave 5 (i.e., 2 years prior to the measurement of self-control at wave 6). We estimated the same models as presented in Tables 2 and 3, replacing the measures for sanctions collected at wave 6 by those collected at wave 5. The results (not shown, but available from the authors) show that three of the five indirect effects for short-sightedness remained significant. More specifically, short-sightedness mediated the effect of sanctions on subsequent delinquency for the police sanctions measures from the LES and the questionnaire on experiences with the police, as well as for the school sanctions measure from the LES. On the other hand, in these models, short-sightedness no longer mediated the effect of sanctions on subsequent delinquency for the measure from the delinquency questionnaire or the measure from the school sanctions questionnaire. In sum, even when considering these longer term effects, three of these analyses support the hypothesis that

Table 2. Path analysis of delinquency, police contacts, and short-sightedness (impulsivity and risk-seeking) and residual component (self-centredness, temper, and physical activities; $n = 1{,}197$)

	Police Contact								
	Measure from delinquency questionnaire			Measure from LES			Measure from questionnaire on experiences with the police		
	B	(SE)	STD	*B*	(SE)	STD	*B*	(SE)	STD
Effects on W6 short-sightedness									
W6 police contact	.401**	0.082	0.144	.251**	0.057	0.124	.236**	0.077	0.088
Sex	−.025	0.028	−0.023	−.014	0.029	−0.013	−.023	0.029	−0.021
Non-Swiss	.024	0.032	0.022	.022	0.032	0.020	.020	0.032	0.018
SES	.000	0.001	0.004	.000	0.001	0.012	.000	0.001	0.004
W5 short-sightedness	.414**	0.027	0.448	.405**	0.027	0.440	.415**	0.027	0.449
Effects on W6 residual component									
W6 police contact	.308**	0.068	0.136	.264**	0.047	0.160	.248**	0.065	0.114
Sex	−.004	0.023	−0.004	.010	0.024	0.011	.000	0.024	−0.001
Non-Swiss	.042†	0.026	0.047	.043†	0.026	0.048	.040	0.026	0.044
SES	−.001	0.001	−0.044	−.001	0.001	−0.034	−.001	0.001	−0.044
W5 residual component	.405**	0.029	0.429	.390**	0.029	0.416	.402**	0.030	0.427
Effects on W7 delinquency									
W6 short-sightedness	.563**	0.088	0.531	.540**	0.086	0.514	.575**	0.089	0.544
W6 residual component	.139	0.118	0.107	.081	0.120	0.062	.136	0.119	0.104
W6 police contact	.269†	0.154	0.091	.570**	0.135	0.268	.214	0.181	0.075
Sex	−.667**	0.092	−0.574	−.632**	0.090	−0.551	−.662**	0.092	−0.571
Non-Swiss	−.055	0.094	−0.047	−.041	0.095	−0.036	−.059	0.094	−0.051
SES	.004†	0.002	0.133	.005*	0.002	0.171	.004†	0.002	0.134
W5 delinquency	.189**	0.023	0.564	.175**	0.023	0.528	.189**	0.023	0.565

Continued

Table 2. (*Continued*)

	Police Contact								
	Measure from delinquency questionnaire			Measure from LES			Measure from questionnaire on experiences with the police		
	B	(SE)	STD	*B*	(SE)	STD	*B*	(SE)	STD
Indirect effects									
W6 police contact → W6 short-sightedness → W7 delinquency	.226**	0.059	n.a.	.136**	0.039	n.a.	.136**	0.050	n.a.
W6 police contact → W6 residual component → W7 delinquency	.043	0.037	n.a.	.021	0.032	n.a.	.034	0.031	n.a.

B, unstandardized coefficients; LES, Life Event Scale; SE, standard error.
$^{\dagger}p < .10$; $*p < .05$; and $**p < .01$ (two-tailed).

Table 3. Path analysis of delinquency, school sanctions, and short-sightedness (impulsivity and risk-seeking) and residual component (self-centredness, temper, and physical activities) (n = 1,197)

	School sanctions					
	Measure from school sanctions questionnaire			Measure from LES		
	B	(SE)	STD	*B*	(SE)	STD
Effects on W6 short-sightedness						
W6 school sanctions	.170**	0.036	0.127	.178**	0.042	0.115
Sex	−.015	0.028	−0.013	−.014	0.029	−0.013
Non-Swiss	.016	0.032	0.015	.014	0.032	0.013
SES	.000	0.001	−0.002	.000	0.001	−0.001
W5 short-sightedness	.401**	0.027	0.436	.405**	0.027	0.440
Effects on W6 residual component						
W6 school sanctions	.118**	0.029	0.108	.157**	0.035	0.124
Sex	.003	0.024	0.003	.007	0.024	0.008
Non-Swiss	.036	0.026	0.041	.035	0.026	0.039
SES	−.001†	0.001	−0.051	−.001†	0.001	−0.050
W5 residual component	.395**	0.030	0.420	.399**	0.030	0.424
Effects on W7 delinquency						
W6 short-sightedness	.556**	0.088	0.524	.539**	0.086	0.511
W6 residual component	.122	0.118	0.094	.112	0.116	0.086
W6 school sanctions	.378**	0.093	0.266	.471**	0.106	0.287
Sex	−.640**	0.092	−0.553	−.625**	0.090	−0.543
Non-Swiss	−.057	0.094	−0.049	−.063	0.092	−0.054
SES	.004	0.002	0.120	.004†	0.002	0.130
W5 delinquency	.176**	0.024	0.526	.179**	0.022	0.537
Indirect effects						
W6 school sanctions → W6 short-sightedness → W7 delinquency	.094**	0.026	n.a.	.096**	0.028	n.a.
W6 school sanctions → W6 residual component → W7 delinquency	.014	0.014	n.a.	.018	0.019	n.a.

B, unstandardized coefficients; LES, Life Event Scale; SE, standard error.
†$p < .10$; *$p < .05$; and **$p < .01$ (two-tailed).

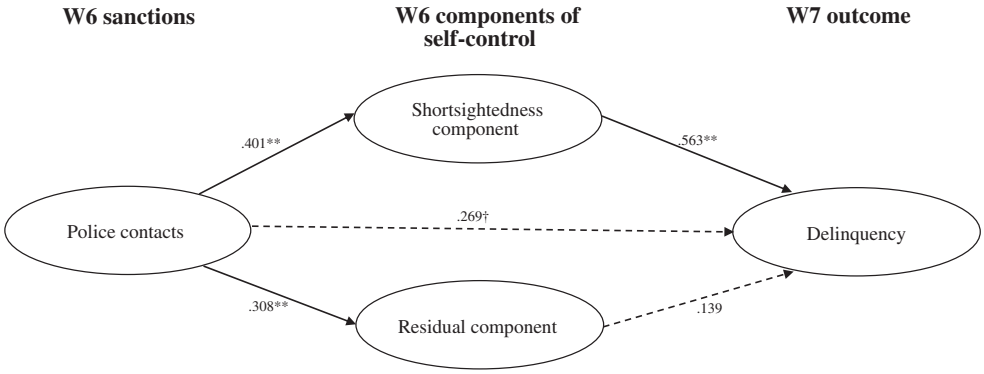

Figure 2. Results on the relations between police sanctions, the short-sightedness component of self-control, the residual component of self-control, and delinquency.
Notes. Solid lines denote significant relations. Control variables displayed in Table 2 are not depicted in the figure for reasons of parsimony. Uninterrupted lines depict relations that are significant at $p < .05$. $^{\dagger}p < .10$; $^{*}p < .05$; and $^{**}p < .01$ (two-tailed).

short-sightedness mediates the effect of sanctions on delinquency, giving us confidence in the results.

Discussion

Both theories of self-control and of deterrence incorporate the idea that the choice for crime is the result of a failure to take into account its long-term costs. These perspectives also converge on a causal ordering according to which the failure to think long term leads people to commit crime and, if caught, incur a sanction. In this article, we explored the possibility that sanctions may decrease self-control and therefore increase the likelihood of subsequent delinquent behaviour. We theorized that the criminogenic effect of

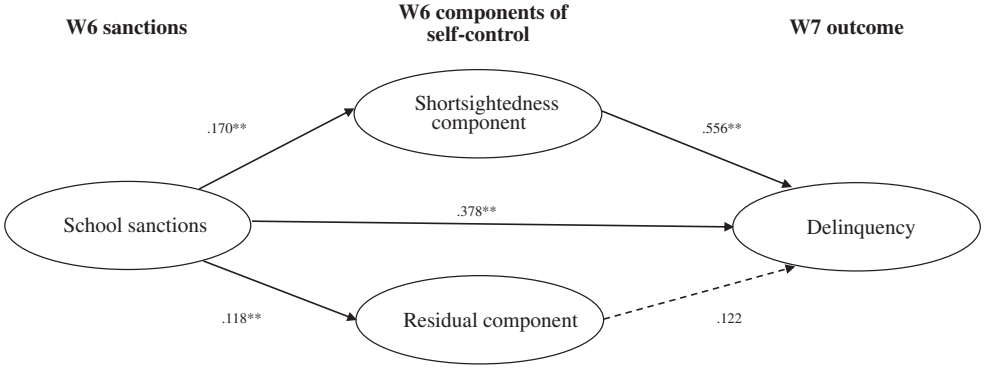

Figure 3. Results on the relations between school sanctions, the short-sightedness component of self-control, the residual component of self-control, and delinquency.
Note. Solid lines denote significant relations. Control variables displayed in Table 2 are not depicted in the figure for reasons of parsimony. Uninterrupted lines depict relations that are significant at $p < .05$. $^{\dagger}p < .10$; $^{*}p < .05$; and $^{**}p < .01$ (two-tailed).

sanctions on crime could operate via self-control in the sense that sanctioning may reduce people's ability and/or willingness to act with their longer term interests in mind.

We tested this mediation hypothesis using a longitudinal design with three different measures of police contact and two measures of school sanctions as predictors, and controlled for prior levels of self-control and delinquency. As predicted, self-control partially mediated the relation between sanctions and delinquency. A series of additional analyses showed our findings to be robust. Below, we discuss our findings in the light of existing criminological theory and criminal justice policy, after considering the limitations of this study.

As a first limitation, we note that although there are conceptual and empirical arguments supporting the assumption that impulsivity and risk-taking form the core of self-control due to their shared temporal content, it has been argued that these two components too can be distinguished from each other and analysed separately as they may be differentially related to crime (Burt *et al.*, 2014; Steinberg *et al.*, 2009). Indeed, even though various existing operationalizations of impulsivity incorporate risk-seeking and in spite of considerable empirical overlap between both constructs, they are not identical. Impulsivity is a more cognitive construct reflective of an inability to think ahead, whereas risk-taking is more motivational in nature (Van Gelder et al., 2018). In the present study, we decided against also examining these constructs separately due to the limited number of items available to measure them and because the items of the Grasmick *et al.* (1993) scale measuring impulsivity (e.g., 'I often do whatever brings me pleasure here and now, even at the cost of some distant goal') and those measuring risk-seeking (e.g., 'Excitement and adventure are more important to me than security') show substantial content overlap.

Another limitation of this study is that despite the rigorous longitudinal design and robustness checks, we cannot conclusively rule out alternative interpretations or selection bias. For example, although we were careful to minimize the possibility of potential confounders by using a series of control variables, including earlier levels of self-control, prior delinquency, sex, ethnicity, and SES, it is still possible that additional, non-observed variables explain the relations that we found. Although an experimental design would solve the causality issue, it is limited in terms of the sanctions that can be delivered, which threatens ecological validity. That is, sanctions that mimic real-life situations are out of the question in experiments for ethical reasons. Furthermore, we did not examine whether police contact led to any further actions in the criminal justice system or whether the school sanctions related to official warnings and cautions by the school principal. It is therefore currently not known on what exact levels sanctions impact on self-control and predict delinquency.

Having reviewed the limitations, we turn to a discussion of how our findings relate to research and theory on the effect of sanctions. The finding that sanctions predict delinquency, while contradicting deterrence theory, provides further empirical support for previous empirical research suggesting either no effect of sanctioning or finding that sanctioning actually contributes to reoffending rather than preventing it. It also aligns with various criminological perspectives, such as labelling (Becker, 1963), defiance theory (Sherman, 1993), and the age-graded theory of informal social control (Laub & Sampson, 1993), that have argued that sanctions can induce effects that are opposite to what they aspire to achieve. More specifically, we think that self-control, and related constructs capturing short-term mindsets, may underlie several of these theories. That is if, as suggested by labelling theory, sanctions lead offenders to internalize the label of offender, and if offenders are characterized by low self-control, then it stands to reason that they will adapt to this label and act in ways that are impulsive and risk-seeking.

Furthermore, according to labelling theory, the label of delinquent that sticks to offenders may inhibit finding successful engagement in future-oriented activities, such as employment, an important factor in successful desistance from crimes (Thornberry, 1987). It would be interesting to explore to what extent this inhibition could also impact on the ability and motivation to think ahead and to exercise self-control.

In short, sanctioning may operate on self-control in both direct and indirect ways. We think that the view of self-control as a stable individual trait that is impervious to external influence after the childhood years, and its success in explaining delinquent behaviour, is likely to have obscured the possibility that criminogenic factors, such as sanctioning or cumulative disadvantage, are related to crime precisely because they impact on people's levels of short-sightedness and their ability to exert self-control.

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Author contributions

Jean-Louis Gelder (Writing – original draft; Writing – review & editing) Margit Averdijk (Formal analysis; Methodology) Denis Ribeaud (Data curation; Project administration; Writing – review & editing) Manuel Eisner (Data curation; Funding acquisition; Writing – review & editing).

Data Availability Statement

Research data are available from the first author.

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