

Artículo de investigación

## Social and personal control, legitimacy of authorities, and social cohesion as protective factors of anti-sociality in adolescents

### *Control social y personal, legitimidad de las autoridades y cohesión social como factores protectores de la conducta antisocial en adolescentes*

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### Abstract

Law can shape individual and social behavior in different ways including through perceived control and legitimacy of authorities. The primary aim of this study was to investigate whether legitimacy of authorities, social and personal control, and social cohesion influence antisocial behaviors in juvenile offenders. The study, included a sample of two hundred juvenile offenders in Mexico, used structural equation modeling to test the relationship between the perception of just treatment by police and judges (i.e., legitimacy) and social and personal control and outcomes of antisocial behaviors and tendencies (self-report and probability of antisocial behavior as well as reports of peer antisocial behavior). Results indicate legitimacy of authorities and personal control had a negative effect while social control showed a positive effect on these behaviors. Social cohesion had a positive effect on social control. Our results suggest that legitimacy of authorities and personal control act as protective factors against antisocial behaviors whereas, contrary to the expected results, social control may be a risk factor. This research highlights the importance of preventative protective efforts in juvenile offenders such as just treatment and development of personal control rather than the use of punitive processes. In this sense, it is important to consider alternatives for judicial involvement and punishment such as

community programs as well as cognitive and emotional prevention and intervention efforts to reduce antisocial behaviors. Programs such as the Reasoning and Rehabilitation Program, other cognitive skill interventions as well as developmental prevention programs have shown efficacy.

**Keywords:** legitimacy of authorities; personal control; social control; social cohesion; antisociality.

## Resumen

La ley puede modelar la conducta de diferentes maneras, consecuentemente, el objetivo de este estudio fue analizar los efectos de la legitimidad, el control social y personal, y la cohesión social en la conducta antisocial de jóvenes infractores. Doscientos menores infractores en México contestaron un cuestionario realizado para este estudio. Los datos fueron analizados a través de ecuaciones estructurales. Cuatro factores fueron especificados: Legitimidad de las autoridades, relacionada con la percepción de tratamiento justo por parte de policías y jueces. Disuasión y norma social conformaron la variable de control social. Orientación al futuro, normas personales y autodeterminación integraron la variable de control personal. La variable conducta antisocial resultó del autoreporte respecto a la conducta antisocial y la probabilidad de conducta antisocial, y del reporte de la conducta antisocial de los amigos. Los resultados indicaron un efecto negativo de la legitimidad y el control personal y uno positivo del control social en la conducta antisocial. La cohesión social tuvo un efecto positivo en el control social. Contrario a lo esperado el control social tuvo un efecto positivo en la conducta antisocial. Por lo tanto, se deben considerar alternativas al “tratamiento” en internamiento (cárcel), ya que la disuasión y el castigo no producen los efectos esperados de retraer a los adolescentes de que cometan delitos. La alternativa pudiera ser los programas de tratamiento comunitarios, así como programas de prevención e intervención que contemplen aspectos emocionales y cognitivos.

**Palabras clave:** legitimidad de las autoridades; control social; control personal; cohesión social; conducta antisocial.

## Introduction

Juvenile delinquency, and in general antisocial behaviors, have become an increasingly serious problem affecting adolescents, their families, and society. This is especially true in Mexico where crime and violence perpetuated by minors has been on the rise. While incarceration rates for adolescents have been in decline, only 1169 have been incarcerated in 2017 compared to 11,239 in 2011 throughout the country (Instituto Nacional Estadística Geografía e Informática [INEGI], 2017), antisocial behaviors persist 16,805 reports to the police in 2015 (INEGI, 2018). It is thus crucial to identify not only psychosocial risk factors, but also factors that may protect against the appearance of antisocial behaviors, in Mexican adolescents. The

literature suggests there are two main strategies to increase compliance with the law. One centers around legal or social coercion (punishment) and the other relies on self-regulation (personal restrictions) (Tyler, 2011). As such, some of the most studied psychosocial factors which may reduce the appearance of antisocial behaviors are perception of legitimacy of authority figures and social control as well as personal values and norms (Nadler, 2017). There are two perspectives in the normative model related to the obedience of the law: The normative perspective, which is focused on the internalization of the norms (legitimacy or perception of justice and personal control or moral standards or self-control). On the other hand, the instrumental perspective is related to the resources of the state or the society to shape behavior (social or legal punishment) (Tyler, 2006).

Social control mechanisms are established so individuals conform to societal rules for a harmonious coexistence. Nagin and Pogarsky (2001) proposed a general deterrence model that includes both legal and extra-legal factors in the same construct. From this perspective, existing formal (legal) and informal (extra-legal) factors guide people to follow rules. Current crime control is fundamentally based on punishment, while social condemnation is thought to act as a deterrent due to the social cost of that criminal behavior. The deterrent effect of formal sanctions is greater for people with higher degrees of fear of social disapproval (Williams & Hawkins, 1986). Contrary to these theories, Aizer and Doyle (2015) found that incarceration increased the probability of arrest during adulthood. High rates of punishment could cause a loss of contingent value of punishment and can likewise cause iatrogenic effects (Fagan & Meares, 2008). Moreover, the literature has been inconsistent on the effect of deterrence on decreasing antisocial behaviors (Matthews & Agnew, 2008; Pratt et al., 2006). Some studies show that longer sentences have been related to increased recidivism (Wright, 2010) while others indicate that deterrent effects depend on personal characteristics such as personality (Pogarsky, 2002). Further evidence of the deleterious effect of incarceration, a longitudinal study including British adolescent twins found that contact with the judicial system promoted delinquency instead of deterring it (Mutz et al., 2020).

Social norms (SN) theory argues that peer cognition and actions influence behavior (Germar & Mojzisch, 2019) and is understood as the shared beliefs of conduct based on social perception (Jackson et al., 2019). These can be classified as injunctive or descriptive, where injunctive norms are linked to the beliefs of what individuals are required to do, while descriptive norms relate to what people actually do (Huber, et al., 2017). Evidence suggests that adolescents evaluate their behavior in comparison to peer behavior. This process helps them adjust to social requirements as they measure the appropriateness of their behavior in relation to perceived peer norms (Cotter & Smokowski, 2016). Social norms have the potential to be counterproductive. Evidence has suggested that adolescents may adopt aggressive behaviors and antisocial norms when faced with peer groups that are likewise involved with such behaviors (Laninga-Wijnen et al., 2016). Similarly, adherence to peer norm aggression was acknowledged as a process of selection and maintenance of friendship in the classroom setting

(Veenstra & Dijkstra, 2012). Moreover, Haun, Rekers, and Tomasello (2014) found that children tend to match their peers, and that they adjust their behaviors to be congruent with group norms. Social norms are ecologically formulated to facilitate individual interaction (Gelfand & Jackson, 2016).

An important protective factor against antisocial behavior is social cohesion (SC) or the social bonds established within the social structure (Fonseca et al., 2019) and the intention to remain and identify with a group. It can be assessed by evaluating neighbourhood networks, the quality and quantity of these associations, and the degree of citizen involvement in common problem resolutions (Lewicka, 2005). SC among neighbors has been shown to have an impact on criminal behaviour stigma, which reduces criminality (Fagan & Meares, 2008). Similarly, social network cohesion in schools promotes prosocial behavior (van den Bos et al., 2018) and happiness (Delhey & Dragolov, 2016). In the same vein, social norms affect behavior only if individuals perceive themselves to be strongly attached to the group (Terry et al., 2000) where the more proximate the groups are and the higher the exposure, the more influence on adolescent behaviour (Gryczynski & Ward, 2012). Maintaining a friendship with antisocial peers can be considered a component of antisocial tendencies. Social cohesion can thus lead to increased or decreased compliance with the law depending on the group the adolescent feels most cohesion towards and norms this group may have.

Social cohesion also takes the degree of legitimacy of authorities of societal institutions into account (Schiefer & van der Noll, 2017). Perceived legitimacy of the justice system and its processes is associated with individual behavior (Tyler & Jackson, 2014). However, law enforcement is primarily tasked with deterring prospective lawbreakers from committing a crime (Earnhart & Friesen, 2013), in many cases, contact with the justice system can result in more adverse than beneficial effects (Baron, 2013). Young offenders describe their subsequent experiences with the justice system as more problematic than their first encounter, regardless of its putatively rehabilitative purposes (Steinberg et al., 2004). Legitimacy of authorities can thus be understood as a psychological property of an institution that leads individuals to believe that it is just, correct, or appropriate (Tyler, 2006) which may further lead to a perceived right to power (Trinkner, 2019). As such, legitimacy of authorities motivates people to act according to the law (Tyler & Jackson, 2014). Higher perceived legitimacy of authorities contributes to a more effective criminal justice system. For instance, negative attitudes toward the law were associated to higher youth criminal offenses (Fine et al., 2017; Wallace et al., 2016). Furthermore, it has been suggested that authority legitimacy might be a source of social control (Nivette, 2014). Increased authority legitimacy leads to greater citizen compliance with the law due to a shared normative understanding of appropriate social behaviour (Walters & Bolger, 2019). Thus, legitimacy of authorities is also considered an auxiliary process of social control (Zelditch Jr, 2018).

Apart from social factors, personal variables can also be protective against the appearance of antisocial behaviors. Personal control, understood as an individual's ability to refrain from committing acts in conflict with social norms, can also prevent antisocial behavior (Shell & Husman, 2001). It is also understood as the ability to manage the environment to achieve required aspirations (Thompson, 2017). While low personal self-control predicts early adolescent antisocial behaviors (de Kemp et al., 2009; Franken et al., 2016). Social control theorists argue that social norms can be imposed not only by societal structures, but also need to be internalized by formal or informal processes of socialization (Fagan & Meares, 2008). Thus, it is extremely important that adolescents internalize rules and exhibit personal control. Personal control has a positive relation with adaptive functioning (Thompson, 2017). Personal norms (i.e., self-imposed rules), self-determination (i.e., the ability to manage oneself), and future orientation (i.e., anticipation of future consequences) can also be considered components of personal control as they may contribute to the self-regulation of behaviour.

Personal norms (PNs) can be defined as the moral standards or moral obligations of individuals (Dalvi-Esfahani et al., 2017). Moral disengagement has been associated to antisocial behavior (Boardley et al., 2020). Robles-Haydar et al., (2021) found that moral disengagement, as well as openness and leader values, was a risk factor of antisocial behavior. Recent literature has also suggested that personal norms are associated with social norms and peers can shape personal norms (Pinho et al., 2021). Empirical evidence suggests that personal norms may lead to increased prosocial behaviors (Catola, et al., 2021).

Future orientation, understood as the ability to anticipate long-term consequences of an action (Shell & Husman, 2001), is comprised of thoughts, motivations, feelings, and hopes for the future and provides the basis for planning and setting goals (Arnett, 2000). It is associated with controlled beliefs in the extension of future regulation. In a longitudinal study of African American adolescents (Stoddard et al., 2011), future orientation was related to a decrease in violent behavior. Likewise, future oriented adolescents are less likely to be involved in criminal behavior (Walters, 2019).

Self-determination theory (SDT) posits that people are active contributors or actors in their behavior (Deci & Ryan, 2000). The ability to think for oneself and to act accordingly is similarly considered self-determination (Catalano et al., 2004). An individual raised in unfavorable developmental conditions may have difficulty developing self-determination, which can lead to withdrawal and antisocial behavior as compensatory motives for unfulfilled needs (Deci & Ryan, 2000). Furthermore, evidence has suggested that self-determination reduces delinquency (Houchins, 2002). Peetz and Milyavskaya (2021) found that autonomous motivation was linked to prosocial behavior. Although each of these variables have been studied extensively, few investigations have assessed their concurrent effect. Thus, the general objective of this research was to examine the effect of legitimacy of authorities, social cohesion, and social and personal control on anti-sociality in juvenile offenders. To this end, three hypotheses were tested. First,

the paper proposes an extended model of deterrence that includes direct (fear of sanction) and indirect (stigma, attachment, and commitment costs) consequences of legal sanctions. We propose that legal (deterrence) and extra legal (social norm) sanctions could coherently form a construct of social control. Secondly, given the previous evidence this study sought to investigate whether personal control consisted of personal norm, future orientation, and self-determination. Finally, the direct or indirect (via personal control) effect of legitimacy of authorities and social control on antisocial behavior and tendencies was tested. Our general hypothesis was that social control, personal control, and perceived legitimacy of authorities will reduce antisocial behaviour in juvenile offenders.

## Method

### Participants

Two hundred adolescents living in a state-run juvenile detention institution answered a set of self-report questionnaires. The statewide institution is an umbrella comprised of four facilities: three for young men and one for young women. Participants were randomly selected from all four facilities. Participant's age ranged from 14 to 21 years old ( $M = 16$ ,  $\sigma = 1.6$ ), where only 23 (11.5%) reported being female, (proportionate to the female population in the detention centers). Thirty-four (34) of the adolescents (17%) had completed elementary school, and 110 (55%) finished middle school, where none had finished high school.

### Instruments

Instruments included demographic questions as well as self-report scales measuring deterrence, social norm, legitimacy of authorities, social cohesion, personal norm, future orientation, self-determination, and antisocial behavior (self-report, report of peer behavior, and antisocial behavior probability).

The *legitimacy of authority* construct was assessed using two subscales a trust and satisfaction (quality of treatment) with police and judge actions scales. Participants self-reported their opinions about the fairness of judges' verdicts and perception of police actions by eliciting participant response regarding the impartiality of police actions in the application of the law. Questions were adapted from a normative model scale, which included 14 Likert-style items (Tyler, 2006). The scale ranged from 0 to 10 (0 = very unfair to 10 = very fair) and demonstrated acceptable internal consistency reliability in this study ( $\alpha = .71$ ).

The *social cohesion* scale was adapted from Fone's (2007) neighbourhood cohesion scales which measure community relations as well as affective and instrumental support. Ten of Fone's (2007) 5-point Likert-style items (0 = strongly disagree and 4 = strongly agree) were used, where participants answered questions such as "I visit my neighbors frequently", "people in my neighborhood are willing to help their neighbors". The instrument showed acceptable internal consistency ( $\alpha = .71$ ) in our sample.

*Deterrence* was operationalized as the probability of arrest and the severity and certainty of punishment. An 18-item, 10-point Likert-style instrument (ranging from 0=strongly disagree to 10=strongly agree) was adapted from Martín, Hernández, and Ruiz (2007), which was based on Tyler (2006) and Wenzel (2004a, 2004b). Our data showed that this scale had good internal consistency reliability ( $\alpha = .88$ ).

*Social norms*, which in this study were assessed as injunctive norms, were measured by asking participants to express the extent to which their best friends considered antisocial acts to be wrong (e.g., entering a prohibited place, bothering other people, stealing, and fighting). The instrument was adapted from Martín et al. (2007) and included 18 Likert-style items (0 = nothing wrong to 10 = extremely wrong). Close friends were selected as they represent the study participants' core reference group. It showed good internal consistency reliability ( $\alpha = .95$ ) in our sample.

*Personal norms* were assessed using an adaption of a Spanish (Martín et al., 2007) 18-item Likert-style scale (0=nothing wrong to 10=extremely wrong), which measures ethical and moral beliefs items. Participants were asked about their perceived wrongness in behaving antisocially, such as entering a prohibited place, disturbing people, fighting, and stealing. The scale showed good internal consistency reliability ( $\alpha = .91$ ).

*Future orientation* was measured through an in-house Spanish translation (see translation section) of 11 items from Zimbardo's time perspective scale (Zimbardo & Boyd, 1999). Participants responded using a 0 to 10 scale to respond to issues such as tendency to plan, foresee events, and their preparation of future actions. This Spanish version of the subscale showed acceptable internal consistency ( $\alpha = .71$ ).

*Self-determination* was evaluated using a Spanish translation of the 14-item autonomy subscale from the Arc's Self-Determination Scale (Wehmeyer, 1995). The scale was based on self-determination theory and autonomy was one of the three elements of it. Ryan and Deci (2018) describe autonomy as the regulation of the behavior by the self, it is conceived as voluntary behavior. This version of the subscale showed acceptable internal consistency ( $\alpha = .74$ ) in this sample.

*Antisocial behavior* was assessed through a self-report 18-item, Likert-style scale developed by Vazsonyi et al., (2001) and translated to Spanish in-house. Participants reported the frequency with which they have committed antisocial acts (e.g., entering in a prohibited place, bothering other people, stealing, and fighting) on a scale from 0 to 10 (0=never to 10=always). This version showed acceptable internal consistency ( $\alpha = .71$ ) in this sample.

*Probability of committing antisocial behaviors* was measured through a modified version of an 18-item questionnaire (Vazsonyi et al., 2001) which assessed the likelihood of exhibiting

antisocial behaviors if the opportunity presented itself (e.g., entering in a prohibited place, bothering other people, stealing, and fighting). The scale ranged from 0 to 10 (0=not probable to 10=very probable) and showed acceptable internal consistency ( $\alpha = .91$ ).

*Peer antisocial behavior* was assessed by asking participants to report the occurrence of peer antisocial acts using a modified version of 18, ten-point Likert-style items (Vazsonyi et al., 2001) (e.g., entering in a prohibited place, bothering other people, stealing, and fighting) using a 0 to 10 scale (0=never to 10=always). The instrument showed acceptable internal consistency ( $\alpha = .91$ ).

## **Procedure**

### **Scale translation**

The antisocial behavior, peer group antisocial behavior, probability of committing antisocial behavior, self-determination, future orientation, and legitimacy of authorities' scales were translated from English to Spanish. After translation, these were back translated to check for equivalence of meaning between the source and target texts. The Spanish translated instruments were tested in a Spanish speaking population prior to the start of the study to assess and improve reliability and validity. Firstly, Cronbach alphas were calculated to determine reliability (internal consistency). Results showed that all the scales had acceptable consistency (values higher than .70). Given that we found that the scales had acceptable reliability, no items were removed from any of scales. Similarly, confirmatory factor analysis was conducted for all scales which suggested concurrent validity for all of them.

First, the university of Sonora Ethical Committee checked the project and proportionated the authorization. Then, permission was obtained from the State Secretary of Security to invite adolescents in juvenile detention institutions to participate in the study. Prior to participation, adolescents and their parents were briefed on the objective and the potential benefits and risks of the study. Once informed, participants and their guardians signed informed consent forms and confirmed that their decision to participate was voluntary. Once consent was obtained, highly trained psychologists interviewed the adolescents inside the detention center facilities. Interviews took approximately 35 minutes to complete.

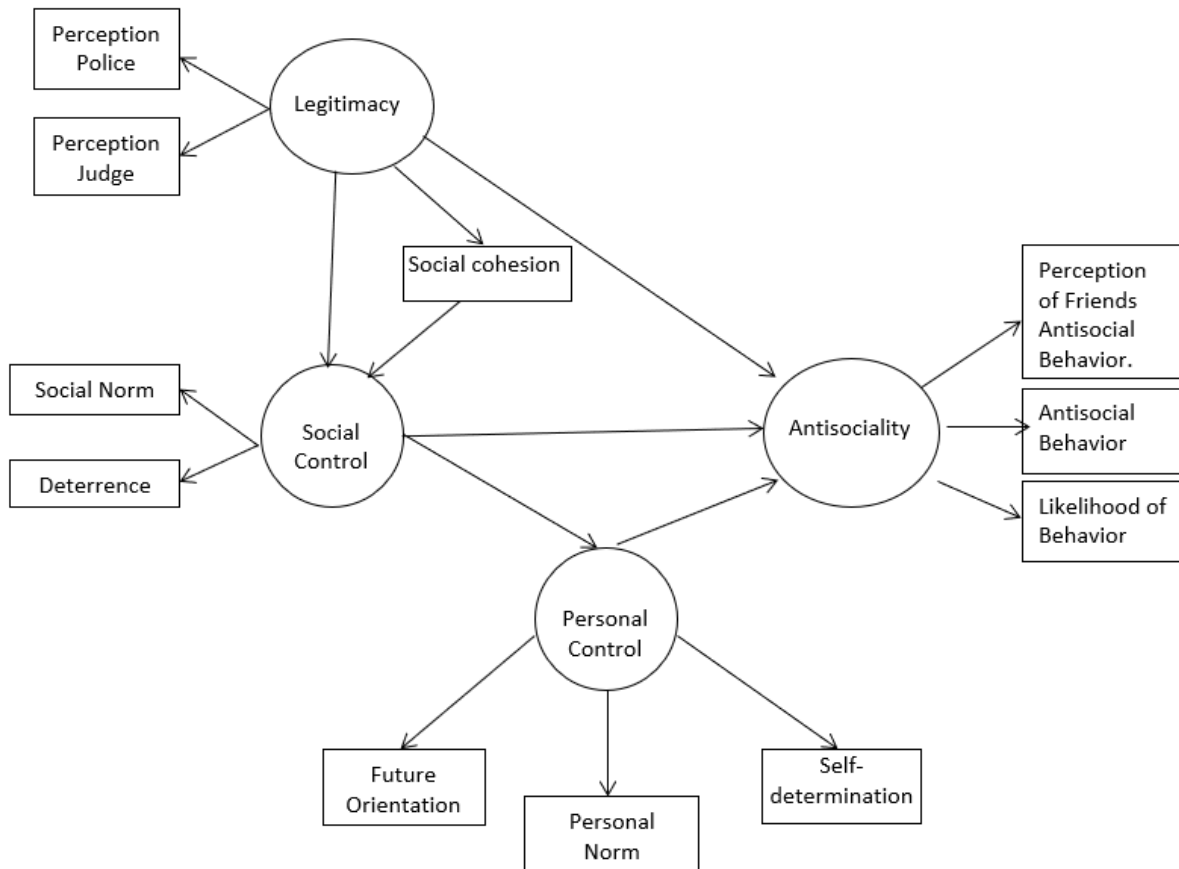
### **Data analysis**

Univariate analyses were performed, including means and standard deviation for continuous variables and frequencies for categorical variables. Cronbach alphas were used to determine reliability (internal consistency) using SPSS v.21. Indices were calculated by averaging item scores for each scale. To test normality of our data we used the Kolmogorov-Smirnov y Shapiro-Wilk normality test as well as the Mardia test for multivariate normality. A structural equation model consisting of four factors (legitimacy of authorities, social control, personal control, and anti-sociality) was tested based on Nagin and Pogarsky's (2001) proposed integrated



deterrence model. In our proposed model, legitimacy of authorities was comprised of perception of the judges and police actions variables. Social control was comprised of social norm and deterrence. The personal control factor included personal norms, future orientation, and self-determination. Finally, antisocial behaviors were composed of self-report antisocial behavior, likelihood of antisocial behavior, and peer antisocial behavior. Direct and indirect effects of legitimacy of authorities, social control and personal control on antisocial behaviors were tested using a structural equations model in the EQS-6 software. Since personal control is considered to help adaptive functioning to changing social conditions, we also tested the relationship between social control and personal control. Given that identifying to a group increases attachment to the social norms and perception of the legitimacy of authorities, we tested the effect of social cohesion on legitimacy of authorities and social control. Thus, we sought to test 3 mayor hypotheses: 1) legal and extra-legal (social norm) sanctions could coherently form a construct of social control, 2) personal control as a construct is comprised of personal norm, future orientation, and self-determination, and 3) social control, personal control, and legitimacy of authorities will reduce antisocial behaviour in juvenile offenders See [Figure 1](#) for the theoretical model.

Given that the data did not demonstrate a normal distribution ( $Mardia = 14.74$ ), the structural model was tested using the ML robust method. Two kinds of indicators, practical and statistical, were considered to test whether the data supported the proposed hypothetical model (Bentler, 2006). Statistical indicators included  $X^2$ , which measures the difference between the proposed model and the saturated  $X^2$ . If the theoretical model is not different from the saturated  $X^2$  it will not be significant ( $p > .05$ ) suggesting that the model has good fit. To make the  $\chi^2$  test less dependent on sample size, we used the relative  $\chi^2$  ( $\chi^2$  divided by fit index by the degrees of freedom). Congruent with prior literature (Schumacker & Lomax, 2004), if this ratio is less than 5, we deemed the model to have good fit. Further, given this sensitivity of statistical indicators to sample size we also considered practical indicators. The practical indicators used were Comparative Fit Index (CFI), Bentler-Bonnet Normed Fit Index (BBNFI), and Bentler-Bonnet Not Normed Fit Index (BBNNFI). A value higher than .90 (Bentler, 2006) demonstrated a good model fit. Finally, the Root Mean Square Error of Approximation (RMSEA) was used to measure the error in terms of the fit index were we sought a value lower than .08 (Browne & Cudeck, 1992; Zhang & Savalei, 2016).



**Figure 1.** Theoretical Schematic of Adolescents Law Compliance Models.

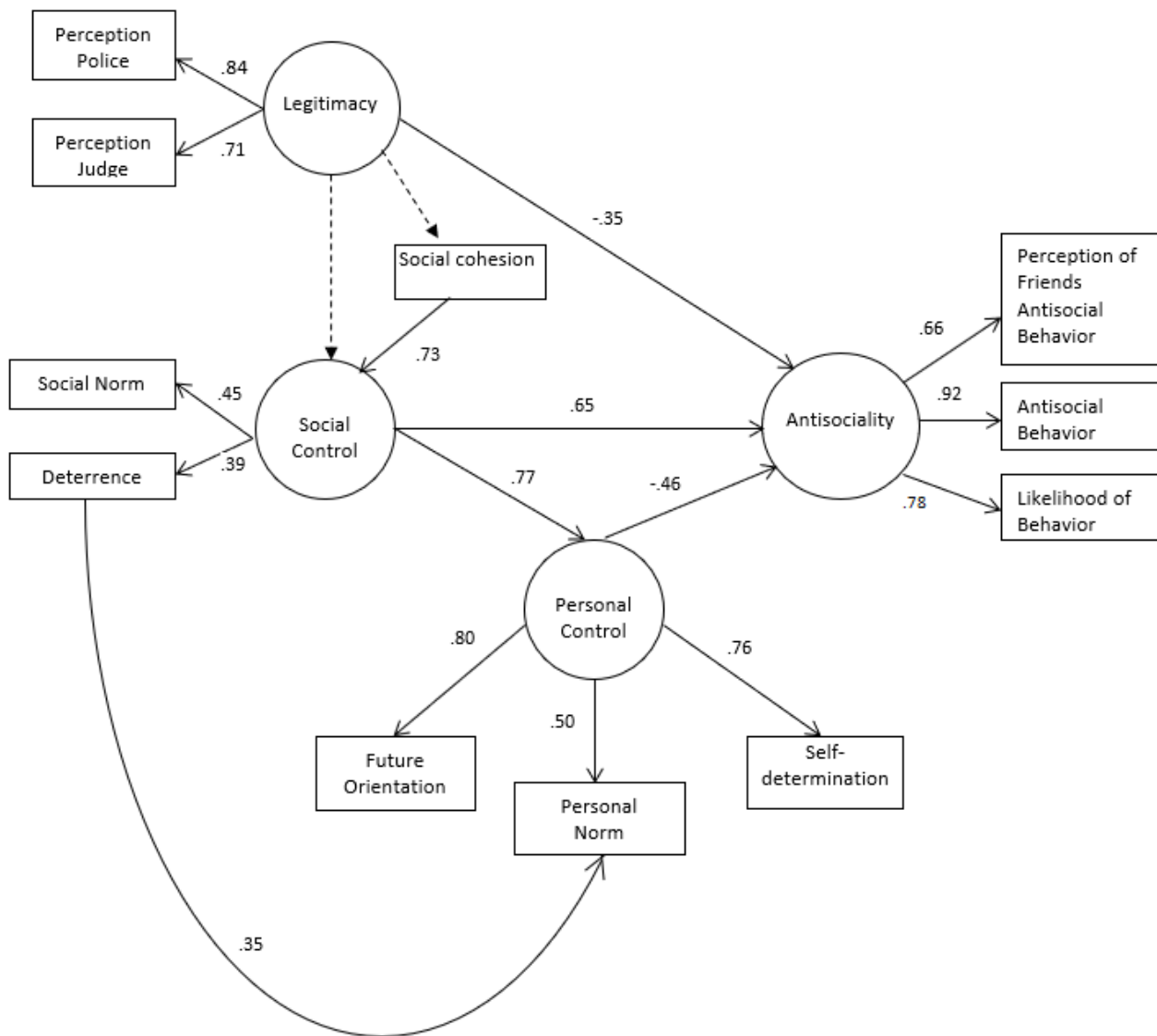
## Results

Approximately 45% of the participants had been arrested more than once, mostly for theft, robbery, drugs, and to a lesser extent, homicide, and assault. Each of the instruments showed acceptable internal consistency ([Table 1](#)).

**Table 1.** Reliability Analysis.

Variable	Alpha
Trust of police	.72
Trust of judges	.72
Social norm	.95
Deterrence	.88
Social cohesion	.71
Personal norm	.91
Self-determination	.74
Antisocial behavior	.91
Likelihood of antisocial behavior	.91
Antisocial behavior of friends	.91

Figure 2 graphically represents the results of the model tested. In congruence with our first hypothesis social norm ( $\lambda = .45$ ) and deterrence ( $\lambda = .39$ ) formed the social control construct. As predicted by our second hypothesis, personal control construct included future orientation ( $\lambda = .80$ ), personal norm ( $\lambda = .50$ ), and self-determination ( $\lambda = .76$ ). General anti-sociality was shaped by antisocial behavior ( $\lambda = .92$ ), the likelihood of this behavior ( $\lambda = .78$ ), and the perception of the antisocial behavior of friends ( $\lambda = .66$ ). Legitimacy of authorities was represented by both confidence and satisfaction with the actions of police ( $\lambda = .84$ ) and judges ( $\lambda = .71$ ).



**Figure 2.** Adolescent Law Compliance Model.  
 $\chi^2=62.23$ ;  $GL=37$ ;  $p=.00$ ;  $BBNNFI=.94$ ;  $CFI=.91$ ;  $RMSEA=.059$ ,  $R^2=.26$ .

Central to the purpose of our study, the model was consistent with our third hypotheses by suggesting both direct and indirect effects of legitimacy of authorities, social control, and personal control on antisocial behaviors. The structural model showed that legitimacy of authorities (Structural coefficient =  $-.35$ ) and personal control (Structural coefficient =  $-.46$ ) directly inhibited anti-sociality. Social control also showed a direct, and positive effect on anti-sociality (Structural coefficient =  $.65$ ), as well as on personal control (Structural coefficient =  $.77$ ). Social cohesion (Structural coefficient= $.73$ ) also had a direct and positive influence on social control. Further we found an indirect effect of social cohesion through social control (Structural coefficient =  $.73$ ). Likewise, social control had an indirect effect through personal control (Structural coefficient =  $.77$ ). Finally, we found deterrence to have a significant covariance with personal norm (cov =  $.35$ ). Despite a predicted association legitimacy of authorities was not significantly related to social control or cohesion. The model showed acceptable goodness of fit ( $X^2(37) = 62.23$ ,  $p < .001$ , relative  $X^2=1.68$ ; BBNNFI= $.94$ ; CFI= $.91$ ; RMSEA= $.059$  and explained more than 25% of the variance (and  $R^2=.26$ ).

## Discussion

Through the testing of three different hypotheses our results showed that just treatment from the legal system and personal control reduces antisocial behaviors and tendencies. Further, our data shows that the use of punitive processes may increase rather than decrease antisocial behaviors.

The current study provides evidence for the first hypothesis asserting that legal and extra-legal (social norm) sanctions could coherently form a construct of social control. Thus, we provide empirical evidence for the Nagin and Pogarsky model, which considers legal and extra-legal sanctions as part of the same construct. The data suggests that the resulting stigma may corrode behavior considerably, therefore, extra-legal sanctions may have the same effect as legal ones (Nagin & Pogarsky, 2001). Deterrence theorists recognize conditional connections between formal and informal punishments, and that formal punishment could be reinforced by informal sanctions (Fagan & Meares, 2008) therefore, a balance between formal and informal controls is recommended.

We also provide empirical evidence for the second hypothesis by showing personal control as a construct is comprised of personal norm, future orientation, and self-determination. In this sense, personal control could include the capacity to anticipate long-term consequences, make future decision and plans, the ability to reach goals, and internal guilt of the actions (Ashforth & Saks, 2000). As personal control can be related to personal belief about the power to influence the environment (Ross & Mirowsky, 2013) it could thus be associated to autonomy, a sense of self-efficacy and can lead to positive reactions like achievement (Shell & Husman, 2001).

The third hypothesis positing that social control, personal control, and legitimacy of authorities will reduce antisocial behaviour in juvenile offenders was partially substantiated. Results demonstrate a negative relationship between legitimacy of authorities and personal control on antisocial behaviors and tendencies. However, results showed a positive effect of social control on antisocial behaviors, which was contrary to what was expected. Since social norm and deterrence form the same construct, the effect of deterrence was similarly contrary to what was expected. The longer the (court) sentences and the certainty of the arrest, the more anti-sociality may be expected. It is important to consider that antisocial adolescents live in a different social scenario, and the social norms of their groups could run contrary to the general rules of society (Gázquez Linares et al., 2015). As such, they could share antisocial norms with their criminal peers (Cotter & Smokowski, 2016b) which may explain why social norms seem to have a contrary effect. Social norms are defined according to the group, and their effect is stronger in close-knit groups (Cialdini et al., 2006). The closest groups to delinquents are other delinquents and humans tend to emulate those more proximate (Gelfand & Jackson, 2016). Another explanation may be that institutionalization creates a distinctive identity that entails new demands of adaptation (Jiménez & García, 2014). In congruence with previous literature (Wright, 2010), this study provides evidence for increased recidivism for those penalised to longer sentences. Therefore, informal and formal controls are more effective in fairer social conditions. As most participants were from a community with limited opportunities, the effect of informal controls was also low or contrary to what was expected. To decrease antisocial behavior should be change the social conditions for the children and adolescents.

Legitimacy of authorities showed a negative association with antisocial behaviors, suggesting that if people perceive more legitimacy of authorities, they will be less likely to commit antisocial acts. When citizens perceive that authorities are unjust, their compliance with the law decreases (Tyler, 2006). The literature suggests that perceived police legitimacy increased cooperation (Tyler and Fagan, 2010) and decreased incidents of offenses (Fine et al., 2017). Thus, our results in congruence with the literature, demonstrate that if adolescents perceive those authorities are unjust, compliance with the law will decrease.

Our results show that social cohesion influences social control, and it seems that antisocial adolescents identify more closely with their peers. Adolescents share norms and identities with their group, and most importantly, they help each other. Thus, our results are in congruence with Jackson et al., (2019) that argued that social norms are shared beliefs of conduct based on social perception as well as Germar y Mojzisch (2019) which suggested peer actions influence behavior.

Our model suggests that personal control had a negative effect on antisocial behaviors. This suggests increased perceived empowerment and sense of responsibility results in less anti-sociality. Consequently, if individuals consider that they can change their environment, they try to meet their needs in accordance with social norms (Deci & Ryan, 2000b). Consequently, the

more future-oriented, self-determined, and attached to personal norms individuals are the more prosocial they will act (Walters, 2019).

The most surprising result was the positive association between social control and antisocial behaviors. A result that should be considered when establishing public policies centered around juvenile justice. Based on the present study's findings, there is a negative impact of incarceration on adolescent behavior. As treatment for juvenile offenders is primarily based on punishment, this could result in more negative than positive consequences. Incarceration leads to the start of a new identity, which deviates from societal norms (Laninga-Wijnen et al., 2016). The deterrent effect of incarceration could alternatively lead to an increase in anti-sociality and recidivism. This may lead to a loss of opportunity to engage in legal work and instead opt to start new criminal networks (Lachman et al., 2013). Moreover, incarceration could increase the opportunity of attachment to aggressive adolescents (Stevenson, 2017); thus, the opportunity to exercise criminal behaviour could rise (Wright, 2010).

The present study does not come without limitations. For instance, the sole use of self-report could cause bias in the answers of the respondents. Secondly, the analyses were correlational and the design cross-sectional; thus, a causal effect cannot be definitively established. There may be other causes for the association between the variables. Consistently, the model explains only 26% of the variance, demonstrating that other variables explain anti-sociality. For instance, some personality (e.g., agreeableness, extraversion) or environment (e.g., university environment, child maltreatment) variables and interaction between them have been shown to be related to antisocial behaviors juvenile delinquency (Frías Armenta, & Corral-Frías, 2021). Despite this previous literature, our model sought to elucidate the effect of legal, social, and personal control in a juvenile offender population, which has not been extensively investigated. Given that this is one of the first to study these variables simultaneously in this type of sample, the results need to be further replicated. Future studies should take more longitudinal approaches and include personal, environmental, and biological variables to further elucidate the origins of antisocial behaviors.

Our results thus suggest that policies regarding treatment of adolescents should be focused on community programs that increase personal control as opposed to a purely punitive model. Adolescents must feel they have control of their lives and that they are responsible for their behavior. Increasing perception of personal control aid adolescents not only in being able to manipulate their environment but also to reach their physical and psychological needs. In addition, it is related to positive feelings and active problem solving (Ryan & Deci, 2018). Our results extend previous evidence suggesting that current treatment centers and peer pressure may lead to greater antisocial behavior (Baron, 2013). Treatment via institutionalization should be avoided in adolescents, particularly for non-violent crimes. Conversely, our results suggest that programs that increase the sense of personal control should be promoted. Programs that teach coping skills, problem solving, cognitive restructuring, self management have been

helpful to increase personal control (Ross & Hilborn, 2008). Programs focused on the development of personal control have been developed to allow adolescents in the participation of decision making and encourages them to participate more directly in taking responsibility for their behavior (Velez et al., 2020); the Reasoning and Rehabilitation Program (Young et al., 2016; Tong & Farrington, 2006), as well as cognitive skill interventions (Travers et al., 2013) and developmental prevention programs (Weisburd et al., 2016) have shown efficacy. Perception of justice from authorities is also an important factor in the model and it has implications in the treatment of adolescents. Juvenile offenders should be treated with dignity, equity, and respect for the process to effectively encourage them to act according to the law. Contrary to what we expected social control seems to push antisocial behavior, therefore, decreasing incarceration and promoting the protection of rights of the adolescents can help in reducing recidivism (Weisburd et al., 2016). Recently, alternative methods of justice such as restorative justice have been used in the treatment of juvenile offenders (Walgrave, 2008). Restorative justice is based on promoting responsibility in adolescents, damage reparation, and community treatment. These treatments have begun to be implemented in Australia, New Zealand, and Canada and have shown greater efficacy in decreasing recidivism as offenders are more integrated to the social environment and feel more positive in their outlook. Juvenile delinquency can thus be reduced by improving the perception of the legitimacy of authorities of the Mexican justice system and by providing prevention programs that allow adolescents to internalize socially acceptable norms.

### Conflict of interest

The authors declare that there is no conflict of interest. All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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