Socialization through violence: Exposure to neighborhood and police violence and the developmental trajectories of legal legitimacy beliefs among adolescents in São Paulo

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Abstract.

We examine the role that exposure to neighborhood and police violence plays in the legal socialization of adolescents aged 11 to 14 years living in the city of São Paulo, Brazil. In a context of idiosyncratic and violent policing, where the state's ability to control crime is low, we assess the extent to which being exposed to neighborhood crime and violence (e.g., listening to gunshots and witnessing or hearing about citizens carrying guns, being robbed, or selling drugs), aggressive police behavior with violent undertones (e.g., certain forcible types of police stops and arrests), and/or outright violent police behavior (officers assaulting a member of the public) is associated with the development of adolescents' judgements about the legitimacy of the law. Analyzing data from a cohort-based, four-wave longitudinal survey of 2005-born young people living in São Paulo from 2016 to 2019, we use growth curve models to estimate developmental trajectories of legitimacy beliefs. Results suggest that individual exposure to police violence is associated with the process of legal socialization and that, above and beyond this individual effect, adolescents attending schools where other students are exposed to neighborhood violence tend to develop more negative views about the legitimacy of legal authority over time.

KEYWORDS

legal socialization, violence exposure, legitimacy of the law, police violence, Brazil

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Acknowledgements

We would like to thank Amy Nivette, Jeffrey Fagan, Johann Koehler, and members of the LSE Mannheim Doctoral Working Group for their invaluable feedback on earlier versions of this article. Data collection was carried out by the Center for the Study of Violence of the University of São Paulo (NEV-USP) with support from the São Paulo Research Foundation (CEPID-FAPESP 2013-07923-7).

Exposure to violence can mark the upbringing of many children and adolescents in poor neighborhoods across the world. Much of the research on this topic has been conducted in major metropolitan areas in the United States (Carr, Napolitano, & Keating, 2007; Rios, 2011), but an increasing amount of work is being conducted in major cities in the Global South (Caldeira, 1996; Kaminer, du Plessis, Hardy, & Benjamin, 2013). The city of São Paulo, for instance, is an instructive example. Willis's (2015) ethnographic work showed how residents of communities dominated by a criminal organization (the 'Primeiro Comando da Capital' – PCC) have to live with a pervasive and tacit threat of violence from both law enforcement agents and PCC members alike. Caldeira (2002) described how working-class people who were common victims of police abuse in São Paulo paradoxically supported violent policing to tackle serious crime in their communities.

In this paper we add to the evidence base by examining exposure to neighborhood and police violence among adolescents in São Paulo. Drawing on Buka, Stichick, Birdthistle, and Earls's (2001) distinction between three different levels of exposure to violence (primary exposure is direct victimization experience; secondary exposure is violence that is personally seen or heard; and tertiary exposure is learning about or being in spatial proximity to violence), we address the relationship between secondary and tertiary violence exposure and legal socialization among adolescents. On the one hand, primary experience of violence can cause physical injury, disability, and death (WHO fact sheet;¹ Hillis, Mercy, Amobi, & Kress, 2016), as well as psychological harm, impaired brain and nervous system development, poor mental health, unhealthy risk behaviors (e.g., drugs and high-risk sexual activity), and decreased life chances (e.g., higher risk of dropping out of school and difficulty finding and keeping a job). On the other hand, studies into secondary exposure and proximity to violence have explored the impact of being in the vicinity of a mass shooting on people's daily emotions (Sharkey & Shen, 2021) and the negative relationship between exposure to violence and educational achievement (Sharkey, Schwartz, Ellen, & Lacoe, 2016; Burdick-Will, 2013). Scholars have also linked police-related deaths to heightened physiological stress levels of adolescents (Browning et al., 2021)

1 <https://www.who.int/news-room/fact-sheets/detail/violence-against-children>.

and proximity to aggressive order maintenance policing to adverse academic performance (Legewie & Fagan, 2019).

Our contribution is to shed light on an issue that has received surprisingly little criminological attention: the role that secondary and tertiary exposure to neighborhood and police violence plays in the legal socialization of adolescents. Legal socialization is the process by which individuals come to develop and understand their relationship with the law and the legal institutions tasked with regulating their behavior and solving collective action problems (Tyler & Trinkner, 2017). Learning about the law means learning about the types of behavior that the law curtails, the ways in which those behaviors are regulated, and the types of obligations and responsibilities—both on the part of the law and citizens—that characterize their relationship with the legal system. This is crucial, since as Trinkner and Tyler (2016, p. 3) argue:

“The viability of consensual approaches to maintaining social order through the legal system depends upon the orientations that children and adolescents develop toward the law during legal socialization. Legal socialization places attention not only on understanding how values and attitudes about the law and legal system are acquired (Tapp, 1991), but also on how legal institutions can leverage that understanding to promote self-regulation amongst citizens (Tyler, 2009).”

We examine the association between exposure to violence (specifically, witnessing and being in proximity to violence and aggression) and the developmental trajectories of legitimacy beliefs among adolescents aged 11 to 14 in São Paulo. Legal socialization occurs throughout the life course, but a critical phase is the internalization of legitimacy beliefs during childhood and adolescence, through relations with parents, experiences in school, and observing and hearing about the actions of legal authorities (among other factors, see Trinkner & Reisig, 2021). We investigate exposure to violence in a context in which violent and aggressive citizen *and* police behavior can be a constituent part of sociability. This is a city in which people can witness, hear about, and be in proximity to not only neighborhood violence and crime, but also police aggression and use of force. Many adults fear crime and some fear police (Jackson et al., 2022). Levels of violent crime are high, daily crime control strategies are routinely based on aggressive, pro-active policing strategies (Zanetic, Manso, Natal, &

Oliveira, 2016), and legal authority can make itself present in people's lives in relatively confrontational ways—for example, almost half of all involuntary police-initiated between 2015 and 2018 involved officers directly pointing a gun at the citizen (Oliveira, 2022). The ability to use force can be palpable in even the most mundane police–citizen interactions.

It is in this city that we test whether violence exposure is related to the development of legitimacy beliefs among adolescents. Drawing upon data from four yearly waves of data from a cohort-based longitudinal survey of 2005-born students collected from 2016 to 2019 – the *São Paulo Legal Socialization Study* (SPLSS) – we assess the extent to which exposure to neighborhood and police aggression and violence is negatively associated with the developmental trajectories of beliefs about the legitimacy of the law between the ages of 11 and 14. Adding to a literature over-reliant on US data, mostly from the *Pathways to Desistance* study (e.g. Augustyn, 2016, Fine & Cauffman, 2015, Fine et al., 2016, 2017, Kaiser & Reisig, 2019 and Schubert, Mulvey, & Pitzer, 2016), we use growth curve analysis to estimate individual developmental trajectories, and we assess the association between exposure to neighborhood and police aggression and violence at each time point and changes in legitimacy judgements. Examining both individual exposure to violence *and* exposure to a violent environment, we test whether attending a school where students are generally exposed to community and police violence is negatively associated with legal socialization, above and beyond any correlations with individual exposure.

Our analysis suggests that adolescents in this major city of the Global South are socialized through violence. Adolescents who attend a school where fellow students are exposed to neighborhood violence tend to develop more negative views about the authority of the law over time, above and beyond the effect of individual exposure, and while seeing the police stop and question a member of the public does not seem to play a role, witnessing an officer assaulting someone is associated with negative changes that pull down the general developmental trajectory of attitudes towards the law over time. We conclude with the idea that, when adolescents are individually exposed to police violence and collectively exposed to community violence, they learn over time to adapt to an environment in which social order seems to be weak, where the police seem to be more of a coercive rather than a protective

force, and where mutual obligations to obey the law seem contested and non-binding. In other words, they start to question whether laws really do apply to everybody, whether legal authorities are always there to protect people, and whether they themselves should feel morally obligated to obey the law.

The rest of the paper proceeds as follows. We first review the literature on legal socialization, especially work into teenage developmental trajectories of beliefs about legal legitimacy. We then discuss a topic that has been little studied – the relationship between legal socialization and exposure to neighborhood and police aggression and violence. We describe the setting of the study and set out the design, hypotheses and analytic strategy. After presenting the findings, we finish by discussing the role of violence in the legal socialization process of adolescents in this major city in the Global South.

1 | LEGAL SOCIALIZATION AND LEGITIMACY OF THE LAW

Legal socialization is the process by which people come to develop over time an understanding of the purpose and function of the law and the legal institutions that administer justice (Tyler & Trinkner, 2017). At the heart of legal socialization are several important questions:

“What obligations does a person owe to law and the directives of legal authorities? How can the legitimacy of a law be determined? What are the limits of legitimate legal authority? These issues are not focused upon the right thing to do to be true to moral principles, but rather on obligations to obey external state authorities (in spite of one’s moral principles). Legal socialization concerns the formation of such perceptions of obligation.” (Tyler & Trinkner, 2017, p. 3)

Legal socialization involves the development of the belief that the law is psychologically binding in one’s present life (Tyler, 2006a; Jackson et al., 2012; Trinkner, Jackson, & Tyler, 2018; Oliveira & Jackson, 2021). Legitimacy is a reason to comply that is rooted in positive self-definition: people glean value and identity from being respectful of rules and authorities—being law-abiding is *who they are* (Tyler, 1997; Trinkner, 2019). While felt obligation is anchored in some overarching sense that legal authority is normatively appropriate, the obligation itself is a content-independent motivation to comply—people obey the law *because it’s the law*. By creating collective obligations that help maintain a mutually beneficial scheme of social cooperation (cf. Rawls, 1964), legitimacy helps to ameliorate

the ‘free-riding’ problem that is created when citizens with different value sets avoid obligations or continually disobey rules. Widespread normative self-regulation then reduces the need for costly and minimally efficient modes of policing based on force and deterrence (Tyler, 2006; Tyler & Jackson, 2014; Trinkner et al., 2018).

A key part of the legal socialization process involves internalizing societal expectations about how the legal agents are supposed to behave (Trinkner & Tyler, 2018) and judging the legitimacy of institutions on the basis of whether officials wield their power appropriately. Norms specifying how power should be wield are likely to be locally specific to the social, political and legal context (for discussion see Jackson, 2018; Trinkner, 2019), but when people believe that legal authorities respect and act upon those normative expectations, they will tend to view the power of the legal system as being rightfully held (Tyler & Jackson, 2014). The subjective quantity and quality of people’s direct and indirect contact with the law is important, according to Trinkner and Tyler (2016) and Tyler and Trinkner (2017), helping to develop a healthy relationship based on mutual understanding and respect, or an unhealthy relationship characterized by animosity and mistrust. The former is associated with more support for the law and legal compliance, with legitimacy leading people to feel a duty and responsibility to follow dominant standards of appropriate behavior, independent of the content of rules and codes. This is because when people experience the exercise of legal power (e.g., through police-citizen encounters or vicarious police contact), legal agents can communicate group inclusion and standing and therefore foster positive beliefs about the entitlement and appropriateness of the law (Tyler, Fagan, & Geller, 2014). The latter is related to cynicism, disobedience, and defiance – unjust exercises of legal power that signal exclusion, marginalization and alienation. This is costly to the legal system and to society as a whole; when public-authority relations are characterized by dominance and force, people are more likely to reject the premise of legal authority and condition their compliant behavior on the likelihood of being caught (Tyler & Trinkner 2017).

It is crucial, therefore, to understand how legal legitimacy beliefs develop among adolescents. A fair amount of criminological research has focused on people’s direct and indirect experience with legal authorities (Oliveira, Jackson, Murphy, & Bradford, 2021). Yet, only a few studies have taken a life-course approach to the study of legal socialization, and what empirical evidence is available comes

mostly from the same US sample of youth offenders (the *Pathways to Desistance* study). For instance, Piquero, Fagan, Mulvey, Steinberg, and Odgers (2005) fitted group-based trajectory models on the Pathways data, showing that contact with legal agents undermined the development of legitimacy beliefs and contributed to more cynic views of legal authority. Mclean, Wolfe, and Pratt (2019) drew on the same data to examine the development of trust in legal authority over time among 20-26-year-olds who were youth offenders, using nonlinear latent growth curve modeling. Few studies have relied upon other samples to examine legal socialization; Nivette, Eisner, and Ribeaud's (2019) study leveraging a sample of youths in Zurich, Switzerland, also using latent growth curve modeling, is an important exception. Crucially, longitudinal studies on legal socialization using a life-course approach in the Global South are scarce, and while recent work has started to analyze data from the *São Paulo Legal Socialization Study* (see, e.g., Komatsu, Theodoro de Oliveira, Chies-Santos, & Alvarez, 2020; Piccirillo, García-Sánchez, Chies-Santos, & Gomes, 2021; Trinkner, Rodrigues, Piccirillo, Gifford, & Gomes, 2020), developmental trajectories of legal socialization have not yet been assessed.

2 | EXPOSURE TO VIOLENCE

Exposure to violence – defined by Buka et al. (2001, p. 299) as “...a broad class of events, composed of victimization from, witnessing of, and hearing about ‘real life’ (not fictional) violent events” – has attracted a fair amount of work outside of criminology, in fields like public health, epidemiology and community psychology. Studies have shown that people who have recently witnessed violence are more likely to report problems of post-traumatic stress disorder (Gianconia et al., 1995) and aggression (Miller, Wasserman, Neugebauer, Gorman-Smith, & Kamboukos, 1999) and are more likely to engage in problematic behaviors (Kilpatrick et al., 2000; Lynch & Cicchetti, 1998). While research has focused on exposure to neighborhood violence, some work has looked at the links between exposure to police violence and mental health and other outcomes (DeVylder, Fedina, & Link, 2020). Ang (2021) found a negative association between living close to where a police killing happened and young people's educational attainment in California, but only among Black and Hispanic students. Unsurprisingly, the statistical effects were especially strong when officers killed unarmed people. Similarly, Geller, Fagan, Tyler, and Link (2014) found that the experience of aggressive policing among young men aged 18-26

years was associated with symptoms of trauma and anxiety. Browning et al. (2021) found elevated levels of stress (measured by taking saliva samples for cortisol, cf. Smith Lee & Robinson, 2019) among Black teenagers exposed to a police-related death of a Black person.

Crucially, we know little about the influence of exposure to citizen and police violence on the development of judgements about legal legitimacy. The one exception is Fagan and Tyler's (2005) cross-sectional community sample study of just over 200 young people aged between 10 and 16 in two New York City neighborhoods. They fielded Selner-O'Hagan, Kindlon, Buka, Raudenbush, and Earls's (1998) 'My Exposure To Violence' (My ETV) scale (witnessing crimes like sexual assault, shootings, and hearing gunfire, and the experience of being chased, seriously threatened, and being home during a break-in). This is important work, but it did not address police aggression and violence, nor did it address individual- and community-level effects, and it did not follow adolescents over time. It can also be built upon using larger samples from non-US contexts.

Legal socialization research largely focuses on direct experiences with police officers (typically in law enforcement contexts) and individual antecedents (such as self-control), linking such factors to the development of legal attitudes such as police legitimacy and legal cynicism (e.g., Geller & Fagan, 2019; Nivette et al., 2019). Yet, this narrow focus is at odds with the history of the field, which has long argued that a constellation of factors drives the legal socialization process (Tyler & Trinkner, 2016; Trinkner & Tyler, 2017). Central to the current study is the idea that exposure to neighborhood and police violence might encourage among adolescents the sense that their environment lacks order, is antagonistic, and that citizens and authorities do not respect the rule of law. Sociological work has also emphasized the importance of the environment in the development of cultural tools, including cultural dispositions towards the law and the legal institutions (Bell, 2017; Harding, 2009; Kirk & Papachristos, 2011), albeit it has not focused on adolescents and the development of legitimacy beliefs over time.

3 | EXPOSURE TO VIOLENCE AND LEGAL SOCIALIZATION

The goal of our study is to fill this notable gap in the criminological literature. We focus on (a) individual-level exposure to neighborhood and police violence (secondary exposure) and (b) the consequences of a violent environment, above-and-beyond individual-level exposure (tertiary

exposure). We test whether secondary and tertiary exposure is associated with negative developmental trajectories of legal legitimacy beliefs, which we operationalize as the development over time of the belief that the law is psychologically binding in one's everyday life and that the rule of law applies to all.

On the one hand, we estimate statistical effects of individual-level exposure. We posit that adolescents who are vicariously exposed to violence tend to develop undermined beliefs about the legitimacy of the law. First, experiencing cases of community violence could signal that legal authority does not provide citizens with security and protection. This is based on the idea that exposure to neighborhood violence could signal to observers an under-policed environment in which agents of the law fail to ensure public safety (Oliveira, 2022). It follows that adolescents exposed to community crime and violence (e.g., listening to gunshots and witnessing or hearing about citizens carrying guns, being robbed, or selling drugs) could interpret this lack of security and protection as messages of neglect and lack of protection, which then contributes to the development of sentiments of distrust and to the rejection of values that legal authority represents (Oliveira & Jackson, 2021). Put another way, when adolescents witness or hear about citizens engaging in violent behavior in their neighborhood, they could begin to develop a relationship with legal authority based on the ideas of coercion, dominance, and confrontation (Trinkner & Tyler 2016).

We also address individual-level exposure to police aggression and violence. According to procedural justice theory (PJT), people evaluate whether legal power is being appropriately exercised during (direct and vicarious) contacts with police (Sunshine & Tyler, 2003; Oliveira et al., 2021; Geller & Fagan, 2019). Public-police interactions are teachable moments, when values important to legal authority are passed on, and when people update their beliefs about the legitimacy of the law and legal institutions (Tyler et al., 2014; Huq, Jackson, & Trinkner, 2017). These teachable moments may be particularly important during those formative years when adolescents are developing attitudes towards legal authority (Fagan & Tyler, 2005; Tyler & Trinkner 2017). We examine whether adolescents who personally witness law enforcement agents engaging in relatively forcible behavior (e.g., making an arrest and handcuffing a suspect) or in outright violent behavior (e.g., assaulting a member of the public) draw lessons from this that police officers exercise their power in aggressive, oppressive and unjust

ways (Bell, 2017), and tend therefore to exhibit undermined developmental trajectories of legitimacy beliefs.

On the other hand, we also address community-level exposure. Sharkey's (2018, p. 86) review of the literature highlights the limited amount of criminological evidence on the impact of living in a violent environment ("residential environments that have high levels of violence, regardless of whether an individual witnesses it in person or hears about it"). He cites the lack of appropriate data on violence at appropriate geographical levels, as well as the scarcity of innovative methodological approaches that shape how people move into and out of violent environments and situations. For instance, if parents have appropriate resources, they can act upon concerns about violence and child safety, whether by moving out of neighborhoods and schools, or avoiding those neighborhoods in the first place. He notes that as a community of criminologists, we know little about how and why violent environments can have an impact on, for example, aggression, depression, peer relations and academic achievement (see for example Margolin & Geordi's, 2000; Chan Tack & Small, 2017) that is above and beyond any such effects caused by individual experience of children and young people.

By way of contribution, we estimate the contextual effect of adolescents attending a school in which other students have been exposed to citizen and police violence in the neighborhoods in which they live. Kirk and colleagues (e.g., Kirk & Papachristos, 2011) view legal cynicism as an emergent property of neighborhoods – a shared adaptation to an environment that residents experience to be disadvantaged, violent and under-policed (Kirk & Matsuda 2011; Sampson & Bartusch, 1998; see also Bell, 2017). In their study of adults across Chicago, Kirk and Papachristos (2011, p. 1191) linked legal cynicism to neighborhood violence, arguing that:

"...antagonism toward and mistrust of the agents of the law may propel some individuals toward violence simply because they feel they cannot rely upon the police to help them resolve grievances. Under such conditions, violence can serve as an additional form of problem-solving behavior in one's cultural repertoire (Hannerz 1969; Black 1983), augmenting but not necessarily replacing other types of problem-solving behaviors such as calling the police."

Their findings were consistent with the idea that legal cynicism was a shared adaptation to structural characteristics of the neighborhood, whereby “...individual perceptions of the law are augmented and solidified through communication and social interaction” (Kirk & Papachristos, 2011, p. 1192). Because legal cynicism operates as a cultural frame through which violence is viewed as possible as an option, they contend, it is also a potential source of violence.

It is important to note, however, that we do not focus on the predictors of violence. We estimate the possible consequences for the development of beliefs about legal legitimacy of exposure to violence and attending a school where other students have been exposed to a violent environment. While the majority of the 11-14 year olds in our study are unlikely to be engaged in violent crime in their neighborhoods, a fair proportion may have witnessed and/or heard about crime and violence in their neighborhoods, as well as aggressive and sometimes violent policing on their streets. In addition, students in a given school in our study are unlikely to all live in the same neighborhoods, but it is reasonable to expect that collective exposure to violence could have an impact on how their classmates will think about the law. A student may have not have been personally exposed to community and police violence, but if their fellow students have, then there may be a process of collective adaptation to the environment. By talking to, sharing stories, and learning from each other about safety, crime, policing and related issues, adolescents may develop a shared understanding of the substance and viability of the law and agents of the law in their everyday lives. Crucially, we operationalize this not in terms of a violent and under-policed environment *within the school itself* – i.e., not violence and lack of protection within the school building(s) – but instead in terms of the aggregate exposure to neighborhood violence of pupils.

Before we turn to the study, we provide some context on the aggressive nature of policing in São Paulo, arguing that the city is a fascinating context in which to study the link between adolescents’ legal socialization and their exposure to neighborhood and police violence.

4 | VIOLENCE AND POLICING IN SÃO PAULO

This large metropolitan area, with a population of 18 million people, is deeply unequal in terms of health, well-being, safety, and the rule of law (Willis, 2015). Residents tend to regularly experience

violence and aggression (Oliveira, 2022), and like other large cities in low- and middle-income countries in the Global South, São Paulo faces serious challenges to effectively control several forms of violence. Crime rates in Brazil are high: the country has the largest number of victims of murder and the second highest homicide rate in South America (UNODC, 2013), with a national rate of 27.8 per 100,000 inhabitants (Cerqueira et al., 2020); in São Paulo, while the average homicide rate is considerably lower, at around 10 per 100,000, in some neighborhoods this rate approaches 20 per 100,000 (Nery et al., 2012), with previous work suggesting that at least one third of all killings are due to interpersonal conflicts (Theodoro de Oliveira, 2016).

Yet, even the relatively low homicide rate in São Paulo (in relation to national rates) does not indicate formal crime control. Criminal governance is also an important factor in the violent socialization process that marks residents of some neighborhoods. The PCC (“First Command of the Capital”, in Portuguese) is a powerful and highly bureaucratized criminal gang. It governs extensively, ruling large urban populations across enormous swaths of territory (Lessing & Willis 2019). The organization imposes and enforces rules, provides protection to residents, and generally behaves as the main authority figure in some parts of the city (Manso & Dias, 2018). As Willis (2015) described in his ethnographic study, this includes the ‘right to kill’ (see also Biderman, Mello, Lima, & Schneider, 2019) – even the apparent peace based on relatively low homicide rates could actually reflect the constant threat of violence faced by some citizens.

Aside from pervasive neighborhood violence, São Paulo residents regularly face aggressive and forcible police practices. Policing is centered around confrontational, proactive methods (Manski & Nagin, 2017), with officers frequently making use of their legal powers to stop and question members of the public (Zanetic et al., 2016). Street-level policing is mostly conducted by the São Paulo Military Police, whose officers receive a highly militarized training and always carry guns (Pinc, 2011). It is not uncommon for law enforcement agents to threaten to use force even in relatively mundane interactions with citizens; even routine police practices such as stopping and questioning members of the public and making arrests can involve some level of aggressive behavior.

On top of aggressive and confrontational police tactics meant to tackle crime, cases of police misconduct involving excessive and sometimes even lethal use of force are relatively common. For

instance, police killings play a significant role in the overall homicide rates. Nationally in 2020, 12,8% of all 50,033 victims of murder were killed by security forces.² Victims of police killings tend to be from particular demographic groups: according to Sinhoretto, Schlittler, and Silvestre (2016), in 2015, 79% of the victims of police lethal use of force in São Paulo were Black or mixed-race and 99% were males,³ with only 14 districts in the city accounting for 50% of all police killings; the authors also showed that the odds of young people being victimized by police forces were 10.5 times larger than those of adults and elders. Even when police use of force is not lethal, it often is excessive, with militarized police officers trained for war-like situations frequently engaging in violent behavior – e.g., assaulting suspects. Previous work suggests that being exposed to such a level of pervasive neighborhood and police violence might have harmful consequences for people’s relationship with legal authority. Cardia (2003), for example, described how recurrent exposure to violence during adolescence functioned as a negative socialization, contributing to the naturalization and legitimization of violence—as well as its reproduction. She also showed that young males from disadvantaged communities in São Paulo were most exposed to neighborhood violence, and viewed legal institutions as disrespectful, ineffective, and corrupt. This could contribute to widespread public perceptions of the police as “just another gang” (Jackson et al., 2022; see also Bell, 2017, for a US perspective).

The Brazilian state’s ability to use force may thus be experienced and/or framed by many citizens as a concrete threat—police not only can but will often use violence to exert power. After centuries of colonialism, slavery and recent dictatorships (Schwarcz & Starling, 2015), there is widespread public currency in the idea that violence is the dominant way to exert power, part of what Pinheiro (1991) labels a “socially rooted authoritarianism”. Even relatively routine police–citizen encounters can be relatively forcible, and witnessing such episodes may be more unnerving than comforting, especially for young adolescents. Coming to believe that the police are to be feared and avoided may undermine their integration into law-abiding communities and discourage the internalization of the values that are a central part of that relationship, including discouraging the belief that the ruling power of the law is functioning, present and binding in their everyday lives.

2 Anuário Brasileiro de Segurança Pública 2021, available at <https://forumseguranca.org.br/wp-content/uploads/2021/07/infografico-2020-ing-v3.pdf>.

3 As opposed to 37% of Black or mixed-race people and 48% of males in the population of São Paulo.

5 | CURRENT STUDY

Overall, our study addresses an important research shortfall: namely, the lack of evidence on the association between exposure to violence and how adolescents learn over time about the viability, functioning, and binding nature of the law and its enforcement. We examine whether adolescents' understanding of the role of law and law enforcement in society and their lives is associated with (a) exposure to aggressive and violent policing, including witnessing officers stopping and questioning a member of the public, making an arrest with handcuffs, or assaulting a suspect, (b) exposure to neighborhood violence (e.g., listening to gunshots, witnessing or hearing about people carrying guns, selling drugs, and being robbed), and (c) attending a school where other students witness or hear about cases of aggressive police behavior, police violence, and/or neighborhood violence.

It is important to note that we do not follow adolescents further into their teenage years and adulthood. We do not test whether, beyond 14 years of age, individuals who believe that legal authorities are legitimate and evaluate existing authorities favorably (because they exemplify core values and norms) also tend to abide by rules and the law in later years. But we do drill into a key period of legal socialization—early teenage years—and we do provide a novel assessment of whether exposure to violence seems to discourage 11 to 14 year olds in São Paulo to be socialized into feeling an obligation to obey the law and believing that the rule of law is present and powerful in society.

Building on one or two prior studies that adopted a life-course approach to study legal socialization (McLean et al., 2019; Nivette et al., 2019⁴), we first test the type of trajectory that best describes the average development of legal legitimacy judgements among young adolescents in São Paulo. We then investigate the role of exposure to neighborhood violence. Ethnographic research in large cities in the US and Brazil shows that young people from disadvantaged communities commonly need to develop strategies to adapt to a violent environment (Bell, 2016; Harding, 2009; Telles & Hirata, 2010), which often involve the development of antagonistic towards legal authority (Bell, 2017; Cardia,

⁴ Using latent growth curve analysis on a US sample of juvenile offenders aged 20-26, McLean et al. (2019) demonstrated that the development of trust in legal authority followed a nonlinear upward trajectory as former juvenile offenders became adults. Similarly, Nivette et al. (2019) showed that youths aged 13-20 in Zurich had a downward linear trajectory of evaluations of police performance and a nonlinear (downward) growth of legal cynicism.

2003; Kirk & Papachristos, 2011). We hypothesize that repeated exposure to neighborhood violence during early adolescence is associated with an undermined development of legitimacy judgements. Crucially, we also investigate the role of exposure to a violent *environment* (Sharkey, 2018), which means assessing the degree to which growing up in a context where most other adolescents are exposed to violence is also associated with damages in the development of beliefs about the legitimacy of the law (irrespective of whether the particular research participant witnessed that violence).

- **Hypothesis 1:** Exposure to neighborhood violence is associated with negative changes in the development of judgements about the legitimacy of the law.

Following this, we evaluate the degree to which vicarious police contact is associated with changes in legal legitimacy. We hypothesize that witnessing law enforcement agents making use of stop-and-frisk powers or arresting a member of the public using handcuffs seems to undermine the development of beliefs about the legitimacy of the law. Even though they consist of lawful and routine police activities, in São Paulo such events may be perceived by young adolescents as more aggressive than in other contexts. The threat to use violence is salient, even palpable, in police-citizen relations (Jackson et al., 2022), and highly militarized officers tend to engage in confrontational practices even in mundane police-citizen interactions (Oliveira, 2022). Witnessing law enforcement agents stopping and questioning a member of the public and arresting a suspect in São Paulo probably consists of more aggressive situations than in Western contexts, which means that they could harm the development of legal legitimacy judgements.

- **Hypothesis 2:** Witnessing police officers making use of stop-and-frisk powers is associated with negative changes in the development of judgements about the legitimacy of the law.

- **Hypothesis 3:** Witnessing police officers making an arrest using handcuffs is associated with negative changes in the development of judgements about the legitimacy of the law.

Highly publicized cases of police brutality have been linked to neighborhood cultural tools such as legal cynicism (see Desmond, Papachristos, & Kirk, 2016), and the experience of intrusive police stops (specifically, when officers communicate suspicion of ongoing or future criminal conduct) has been shown to be correlated with lower levels of police legitimacy (Tyler, Jackson, & Mentovich, 2015). We expand this perspective by evaluating the role that exposure to police brutality may play during adolescence, taking the case of an officer using outright violence and assaulting a member of the public as an example.

- **Hypothesis 4:** Witnessing a police assault is associated with negative changes in the development of judgements about the legitimacy of the law.

Finally, to investigate the degree to which exposure to a violent environment contributes to the legal socialization of young adolescents in São Paulo, we address parallel school-level statistical effects for each of the above:

- **Hypothesis 5:** Exposure to peers who have themselves been exposed to neighborhood violence is associated with negative changes in the development of judgements about the legitimacy of the law.
- **Hypothesis 6:** Exposure to peers who have themselves witnessed police officers making use of stop-and-frisk powers is associated with negative changes in the development of judgements about the legitimacy of the law.

- **Hypothesis 7:** Exposure to peers who have themselves witnessed officers making an arrest using handcuffs is associated with negative changes in the development of judgements about the legitimacy of the law.
- **Hypothesis 8:** Exposure to peers who have themselves witnessed a police assault is associated with negative changes in the development of judgements about the legitimacy of the law.

5.1 | Data and methods

The *São Paulo Legal Socialization Study* (SPLSS) is a yearly, four-wave, cohort-based longitudinal survey into the legal socialization process of early adolescents developed by the Center for the Study of Violence of the University of São Paulo (NEV-USP). The study surveyed 2005-born students living in the city of São Paulo every year from 2016 to 2019 ($n_1 = 800$, $n_2 = 750$, $n_3 = 724$, $n_4 = 702$).

Sampling procedures involved the selection of 112 public or private schools across all districts in São Paulo based on the Probability Proportional to Size (PPS) approach, which avoided the overrepresentation of adolescents from any district of the city. Consent and assent forms were then delivered to all eligible students from each school, and a random sample of 800 respondents was selected among those who returned assent and consent forms (approved by the National Ethical Committee). Pencil-based responses were self-recorded at school, as coordinated by a private polling company (*IBOPE*); from the second wave onwards, participants who had since moved to another school responded to the survey from home, and statistical tests have found no significant association between place of interview and variables of substantive interest. Every participant received a gift card equivalent to 12,00 USD. For more information about the study design, see Thomas et al. (2018) and Trinkner et al. (2020).

The sample is broadly representative of the population of 2005-born students living in São Paulo. Some 50% of the sample are males and 59% study at a state school, in line with population data according the 2010 National Population Census. Overall, 45% are White, 31% are of Mixed Race, 11% are Black, 3% are Asian, and 3% are Indigenous – these are the five racial groups used by the National

Institute of Geography and Statistics (IBGE) (see Bailey et al., 2013). Demographic data are consistent across the four waves, despite slight variations.

All questions were fielded in Portuguese and translated into English by the authors – a list with all survey items, original and translated, can be found in the Appendix. Measures used in this study were collected in every wave with identical wording, although first wave questions were measured as binary indicators (1 = “yes”, 0 = “no”), while in the remaining waves they measured based on a four-point Likert scale. In order to ensure measurement equivalence, we dichotomized all T2, T3, and T4 measures (≥ 2) so that we have repeated measures.

5.2 | Measures

5.2.1 | Judgements about the legitimacy of the law

We define legal legitimacy as the perception that the law has a normatively grounded-authority to govern that is rooted in the sense that the rule of law applies to all (Tyler, 2006; Trinkner et al., 2018; Gur & Jackson, 2020). To assess the extent to which respondents internalize the law’s authority to dictate appropriate behavior, we fielded questions related to perceptions that (i) the law is entitled to be obeyed, regardless of their own moral position on the content of the law; and (ii) the rule of law applies equally to everyone in society. To measure whether the law is entitled to be obeyed (i.e., i: a normatively grounded duty to obey), adolescents were asked to agree or disagree with “laws should be obeyed even when people do not agree with them” and “some laws can be disobeyed” (reverse coded). To measure perceptions that the law applies equally to everyone in society (i.e., ii: rule of law), adolescents were asked to agree or disagree with “laws are the same for everyone,” “there are people who are above the law” (reverse coded), and “laws are meant to protect people.” Respondents rated each item with a four-point Likert scale (from 1 = “strongly disagree” to 4 = “strongly agree”), with the exception of responses collected in the first wave, which were measured as a binary scale (0 = “no”, 1 = “yes”). To ensure longitudinal consistency, all items were dichotomized: the first two points of the Likert scale were coded as 0 whereas the last two points were coded as 1.⁵

⁵ Because the five indicators might reflect two distinct sub-constructs – i.e., duty to obey and rule of law – confirmatory factor analysis models for binary indicators were fitted to assess whether a one- or two-factor solution had a better model fit. Eight

We adopted a formative approach on measurement, which means that we assumed these indicators to constitute the phenomenon (for discussion, see Jackson & Kuha, 2016). A summative index was created using the five survey items, where a score of 0 represents the lack of legitimacy beliefs while a score of 5 represents beliefs that the law has the authority to govern. We interpret this construct as the belief that law applies to all (so is a normatively appropriate force in society) and is psychologically binding in one's life. Average levels of legitimacy vary from 3.70 at the age of 11 to 3.83, 3.81, and 3.56 at ages of 12, 13, and 14.

5.2.2 | Individual exposure to neighborhood violence

To measure exposure to citizen violence, adolescents were asked whether they had witnessed a number of illegal events happening in their neighborhood, including “listening to gunshots”, “people other than police officers carrying guns”, “people being robbed”, and “people selling drugs on the streets”,⁶ The same questions were asked at every time point: at T1, respondents were asked whether they had ever seen each of these scenarios happening in their neighborhood, whereas at T2, T3, and T4 they were asked whether they had witnessed each event since the previous wave.⁷ As with other survey items, response alternatives are slightly different across waves. At T1, measures are all binary (0 = “no”; 1 = “yes”); at T2, items were measured based on a 4-point Likert scale (from 1 = never to 4 = always); and at T3 and T4, items were measured based on the number of times respondents had witnessed each event (0 = never; 1 = once; 2 = a few times; 3 = many times). To ensure longitudinal consistency, we dichotomized all survey items based on whether respondents reported seeing each event at least once (1 = “witnessed the described scenario”; 0 = “did not witness the described scenario”).

CFA models were fitted, contrasting the two solutions using data from each wave. At each point in time, the one-factor solution outperformed the two-factor solution, indicating that all five indicators load onto a single construct. The correlation between the two factors was always estimated at $r_t \geq 0.75$ (for $t = 1, \dots, 4$).

6 We consider witnessing people selling drugs on the streets as an indicator of exposure to neighborhood violence because of the context of São Paulo, where drug trafficking is the horsepower of several criminal organizations operating in some neighborhoods, including the PCC (Willis, 2015; Manso & Dias, 2018). Rather than a commercial transaction, people selling drugs on the streets could indicate proximity to highly bureaucratized criminal organizations.

7 Given that our analytic strategy relies on growth curve modeling, measures of the dependent variable (legal legitimacy) at T2, T3, and T4 are regressed on exposure to neighborhood violence at T2, T3, and T4, respectively, while trajectory parameters (initial conditions and slope) are regressed on exposure to violence at T1. For this reason, it is crucial that T2, T3, and T4 measures of exposure to violence cover precisely the same period (e.g., the period between waves), while T1 measures are allowed to cover a different period (e.g., lifetime before 11 years old) as they influence the initial conditions and slope of the developmental trajectories.

Once all items were dichotomized, we created summative indexes of exposure to neighborhood violence at each point in time ranging from zero (i.e., did not witness any of the events) to four (i.e., witnessed all four events). During their lifetime up until 2016, respondents saw an average of 2.9 events – the mode is 4, in a clear reflection of how rooted violence is among adolescents in São Paulo. Respondents saw an average of 0.76 events between the first and the second waves, 1.09 event between the second and the third waves, and 1.12 between the third and the fourth waves.

5.2.3 | Exposure to police aggression and violence

Most interactions between adolescents and the police in São Paulo involve teenagers older than 14 years old: only 12% of respondents across all waves were stopped and questioned by police officers once or more. Secondary exposure to police aggression and violence, on the other hand, is more common — for instance, more than 80% of respondents across all waves witnessed officers making use of stop-and-frisk powers against a member of the public. Three different aspects of vicarious contact with legal authority were measured at each time point. Respondents were asked whether they had seen police officers “stopping and questioning a member of the public on the street,” “arresting a member of the public using handcuffs,” and “beating someone up.” The first two scenarios involve obviously lawful prerogatives of police work, although they tend to be substantially more aggressive in São Paulo than elsewhere (Oliveira, 2022) – witnessing an arrest with handcuffs, in particular, could be a more traumatic experience for adolescents. The third scenario, on the other hand, refers to a case of outright violence. As predicted by hypotheses two through four, witnessing a aggressive and violent policing practices may be associated with a more negative developmental trajectory of legitimacy beliefs. We did not ask for specific perceptions of police behavior, e.g. respondents were not asked about the procedural fairness or bounded authority of a police-citizen interaction. All questions were measured as a binary scale (0 = “no”; 1 = “yes”).

TABLE 1 Measures and descriptive statistics

<i>Survey items</i>	<i>Mean T1</i>	<i>Mean T2</i>	<i>Mean T3</i>	<i>Mean T4</i>
Laws should be obeyed when even when people do not agree	.94	.88	.91	.88
Some laws can be disobeyed (reverse)	.62	.64	.69	.68
Laws are the same for everyone	.80	.90	.85	.75
There are people who are above the law (reverse)	.36	.48	.46	.41
Laws are meant to protect people	.97	.94	.91	.84
People selling drugs on the streets	.74	.25	.34	.38
People being robbed	.67	.21	.30	.30
People other than police officers carrying guns	.85	.09	.15	.15
Listening to gunshots	.67	.20	.30	.29
Seen police stop and frisk someone on the street	.86	.84	.80	.80
Seen police officers handcuffing and arresting someone	.53	.44	.43	.42
Seen police officers beating someone up	.13	.13	.14	.18
Gender (1 = male)	.50			
Race (1 = white)	.47			

5.2.4 | Time-constant covariates

As time-constant covariates that could influence the growth parameters of adolescents' developmental trajectories of legal socialization, we include respondents' gender (1 = "male") and race (1 = "White, dichotomized to distinguish White adolescents from everyone else, see Bailey, Loveman, & Muniz, 2013).

5.3 | Analytic strategy

We use all four waves of data to fit growth curve models of legal legitimacy. We estimate random intercepts and random slopes, reflecting the initial levels and the slopes of the developmental trajectories of legitimacy beliefs among all respondents. Each adolescent has an estimated developmental trajectory of legitimacy judgements. The latent variables reflecting the initial level and the slope of the trajectories are referred to as growth parameters. Equivalent growth curve models can be estimated via the structural equation or the multilevel frameworks (Bollen & Curran, 2006; Curran, 2003).

Our analytic strategy consists of two steps. We first fit five growth curve models with no covariates and compare their model fit to examine which type of trajectory better describes the development of legitimacy beliefs among adolescents in São Paulo. We use a structural equation framework in the first step as it provides greater flexibility when fitting non-linear trajectories.

Essentially, latent growth curve models involve creating two latent variables which are reflected by the dependent variable at multiple time points (e.g., legal legitimacy at T1, T2, T3, and T4), each representing random intercepts and random slopes. The former is estimated by fixing all factor loadings to 1, the latter by fixing the factor loadings to the time gap that accurately represents the data collections periods – e.g., 0, 1, 2 and 3, respectively for T1, T2, T3, and T4, where one unit represents one year.

Each growth curve model implies a different average development trajectory of legitimacy judgements. For instance, developmental trajectories among respondents could be flat on average, where there is no change over time – adolescents simply maintain their levels of legitimacy throughout the period covered by this study. Trajectories could also be linear on average, where the rate of change over time is constant – adolescents consistently increase or decrease their beliefs of legitimacy from the ages of 11 to 14. Alternatively, the development of legitimacy beliefs could be nonlinear on average, where the rate of change over time is not constant – adolescents could first increase and then decrease their scores of legitimacy, or vice-versa.

TABLE 2 Types of developmental trajectories

Model		Estimation strategy	Substantive implications (type of developmental trajectory)
1A	No growth	<i>Latent Growth Curve Analysis</i> with no random slopes	<i>No change over time:</i> legitimacy beliefs are constant across the four periods
1B	Linear growth	<i>Latent Growth Curve Analysis</i> with random slopes linearly defined (period loadings fixed at 0, 1, 2, 3)	<i>Linear change over time:</i> trajectories of legitimacy beliefs progress linearly (upward or downward)
1C	Quadratic growth	<i>Latent Growth Curve Analysis</i> with random slopes fixed at 0, 1, 2, 3 and a quadratic term fixed at 0, 1, 4, 9	<i>Curved change over time:</i> trajectories of legitimacy beliefs can have one turning point (e.g., they can be U-shaped or inverse U-shaped)
1D	Nonlinear growth	<i>Latent Growth Curve Analysis</i> with loadings of the random slopes being freely estimated rather than fixed	<i>Nonlinear change over time:</i> trajectories of legitimacy beliefs would progress non-linearly over time
1E	Change score	<i>Latent Change Score Model:</i> one latent variable representing change scores for every change from $t - 1$ to t , and random slopes freely estimated based on those latent change scores	<i>Nonlinear change over time:</i> trajectories of legitimacy beliefs are heavily based on previous levels of legitimacy beliefs

We fit five models to examine the average development of legitimacy among adolescents from São Paulo. Model 1A is a no-growth model, where only a random intercept is estimated – the latent variable representing random slopes is not estimated, which would imply that scores of legal legitimacy are constant in time across the four waves. Model 1B estimates a linear growth model, where loadings representing the time gap between waves range linearly from 0 to 3 – this model would imply a linear development of legal legitimacy between 11 and 14 years old. Model 1C estimates a quadratic growth curve model, where a third latent variable is also estimated by fixing loadings to 0, 1, 3, and 9 – this model would imply a curved developmental trajectory, where an upward trajectory turns downward (or vice-versa) at some point. Model 1D estimates a nonlinear growth curve model, where the loadings of the latent variable representing random slopes are freely estimated rather than imposed (e.g., loadings are not fixed at 0, 1, 2, and 3) – this model would also imply a nonlinear trajectory, with potential turning points throughout the four-year period. Finally, Model 1E estimates a latent change score model (McArdle, 2009), where three latent variables representing the change scores from each time point to the next are estimated and random intercepts and slopes are reflected by these latent change scores – this model would imply that the developmental trajectories are nonlinear and heavily defined by previous scores of legitimacy beliefs.

A summary of the five types of developmental trajectories considered can be found in Table 2. Figure 1 provides graphical representations of the five models. We use R's package lavaan (Rosseel, 2012) to fit all growth models using diagonally weighted least squares. Contrasting model fit statistics such as the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), and the root mean square error of approximation (RMSEA), we select the model that best describes the average developmental trajectory of judgements about the legitimacy of the law (here, the quadratic growth curve model).

FIGURE 1 Conceptual diagrams of five latent growth curve models estimating trajectories of legitimacy beliefs

The second part of our analytic strategy involves testing the hypotheses concerning the associations between exposure to neighborhood and police violence and the development of legitimacy beliefs. We include time-varying and time-constant covariates to investigate the extent to which exposure to neighborhood and police violence is associated with changes in judgements about the legitimacy of the law over time. Because the quadratic growth curve model can be equivalently estimated using a structural equation or a multilevel framework, in the second part of the analysis we use a multilevel structure, as it is more straightforward to extend it to a three-level model including varying intercepts at the school level. As such, we can include school-level covariates to assess the associations between the school environment and the development of legitimacy judgements, without risking ecological fallacy.

We estimate five growth curve models using a multilevel framework, all including random intercepts, random slopes, and random quadratic terms – these are the growth parameters that define individual developmental trajectories of legal legitimacy. Controlling for growth parameters, gender, and race, model 2A includes the natural logarithm of the summative index of exposure to neighborhood violence, model 2B includes an indicator of whether respondents witnessed a police stop-and-frisk, model 2C includes witnessing a police arrest, model 2D includes witnessing a police assault, and model 2E includes all four covariates simultaneously.⁸ Fitting separate models first allows us to evaluate changes in magnitude and statistical significance between coefficients of different models.

We then estimate four three-level multilevel models including random intercepts for each school on top of the three growth parameters. The logic here is that observations are nested within respondents (each respondent has up to four observations), while respondents are nested within schools (each school has up to 10 respondents). Model 3A includes both individual-level and the average exposure to neighborhood violence by school, model 3B includes both individual-level and the average exposure to police stop-and-frisks by school, model 3C includes both individual-level and the average

⁸ The reasoning here is that there could be some dependence between the events: there should be a relatively high chance that an arrest follows a stop-and-frisk: 93%, 96%, 93%, and 95% of the respondents who reported seeing an arrest at each time point, respectively from T1 to T4, also reported seeing officers making use of stop-and-frisk powers. Likewise, it is reasonable to assume that most events involving officers assaulting a member of the public follows an arrest: indeed, respectively 80%, 80%, 78%, and 76% of the respondents who reported witnessing a police assault at each time point also reported witnessing an arrest with handcuffs.

exposure to police arrests by school, and model 3D includes both individual-level and the average exposure to police assaults by school.

6 | RESULTS

6.1 | Average developmental trajectories of legal legitimacy beliefs

Model fit statistics of five latent growth curve models with no covariates can be found in Table 3. We assess three fit statistics that focus on the measurement structure of the models. CFI and TLI statistics range from 0 to 1 and indicate good fitness as they get closer to 1, with values greater than .90 being commonly adopted as the acceptable threshold. The RMSEA also ranges from 0 to 1, but greater fit is represented by measures close to 0. With CFI and TLI values of 0.999 and an RMSEA of 0.01, it is clear that Model 1C is the one that best describes the average developmental trajectory of legitimacy beliefs.

TABLE 3 Model fit statistics of five latent growth curve models

	Model 1A <i>No growth</i>	Model 1B <i>Linear growth</i>	Model 1C <i>Quadratic growth</i>	Model 1D <i>Nonlinear growth</i>	Model 1E <i>Change score</i>
Chi-square	131.71	62.27	1.06	30.78	89.32
Degrees of freedom	8	5	1	2	8
p-value	< 0.001	<0.001	0.302	< 0.001	<0.001
CFI	0.638	0.832	0.999	0.916	0.762
TLI	0.728	0.799	0.999	0.747	0.821
RMSEA	0.157	0.135	0.010	0.152	0.127

Results therefore suggest that the development of judgements about the legitimacy of the law among adolescents aged 11 to 14 from São Paulo, on average, has a curved shape. Table 4 displays the results of the quadratic growth curve model (Model 1C). Each respondent has their own growth parameters (i.e., their individual initial level, slope, and quadratic term), but according to the estimated means for the growth parameters *on average* legitimacy judgements increase during the first few years of adolescence until they reach a peak at the age of 13, after which the scores decrease as respondents approach the age of 14. Figure 2 plots the inverse U-shaped trajectory of legitimacy scores that describes the average development of judgements about the legitimacy of the law.

TABLE 4 Latent growth curve model: quadratic growth

		Model 1C	
		<i>Estimate</i>	<i>s.e.</i>
<i>Mean</i>			
	Intercept	3.682	0.037
	Slope	0.269	0.055
	Quadratic term	-0.102	0.017
<i>Variance</i>			
	Intercept	0.486	0.123
	Slope	0.751	0.174
	Quadratic term	0.064	0.015
<i>Covariances</i>			
	Initial condition & Slope	-0.347	0.137
	Initial condition & Quadratic term	0.083	0.034
	Quadratic term & Slope	-0.202	0.047

FIGURE 2 Average trajectory of legitimacy beliefs based on quadratic growth curve model (1C)

6.2. | Exposure to neighborhood and police violence and the process of legal socialization

Now that we selected the quadratic growth curve model as the one that best describes the average developmental trajectories of perceptions of legal legitimacy among adolescents in São Paulo, we investigate the role of exposure to neighborhood and police violence. Results of five conditional quadratic growth curve models examining the associations involving individual-level exposure to violence can be found in Table 5. Models were estimated using the multilevel framework to ease the comparison with three-level models that allow for the inclusion of school-level covariates (in Table 6 below).

All models include random intercepts, slopes, and a quadratic term and control for time-constant demographic covariates (gender and race). Model 2A includes exposure to neighborhood violence (the natural logarithm of the summative index), model 2B includes an indicator of whether the respondents witnessed law enforcement agents stopping and questioning a member of the public, model 2C includes witnessing a police arrest with handcuffs, model 2D includes witnessing a case of police violence (i.e., an officer assaulting a citizen), and model 2E includes all types of exposure simultaneously. Each model is estimated in one step, with time-constant covariates influencing the growth parameters (initial condition, slope, and curve of the trajectories) and time-varying covariates influencing changes in the dependent variable over time – statistical effects of exposure to neighborhood and police violence and vicarious police contact are constrained to equality to indicate the average effects over time.

TABLE 5 Conditional growth curve models assessing the influence of time-constant and time-varying covariates on the development of legal legitimacy

	Model 2A		Model 2B		Model 2C		Model 2D		Model 2E	
	<i>Est.</i>	<i>95% CI</i>	<i>Est.</i>	<i>95% CI</i>	<i>Est.</i>	<i>95% CI</i>	<i>Est.</i>	<i>95% CI</i>	<i>Est.</i>	<i>95% CI</i>
Intercept	3.74*	[3.61; 3.86]	3.72*	[3.59; 3.84]	3.70*	[3.60; 3.80]	3.67*	[3.58; 3.77]	3.80*	[3.65; 3.95]
Year	0.17*	[0.06; 0.29]	0.25*	[0.15; 0.35]	0.24*	[0.14; 0.34]	0.25*	[0.15; 0.35]	0.19*	[0.07; 0.30]
Year (squared)	-0.08*	[-0.11; -0.04]	-0.10*	[-0.13; -0.07]	-0.10*	[-0.13; -0.06]	-0.10*	[-0.13; -0.06]	-0.08*	[-0.12; -0.05]
<i>Time-constant covariates</i>										
Gender (1 = male)	0.05	[-0.04; 0.15]	0.05	[-0.05; 0.15]	0.06	[-0.04; 0.16]	0.07	[-0.03; 0.16]	0.07	[-0.02; 0.17]
Race (1 = White)	0.06	[-0.04; 0.16]	0.06	[-0.04; 0.16]	0.05	[-0.04; 0.15]	0.05	[-0.05; 0.14]	0.05	[-0.05; 0.14]
<i>Time-varying covariates</i>										
Exposure to neighborhood violence (log)	-0.07*	[-0.14; -0.01]							-0.05	[-0.12; 0.02]
Witnessed a police stop-and-frisk			-0.09	[-0.18; 0.01]					-0.03	[-0.13; 0.06]
Witnessed a police arrest					-0.12*	[-0.20; -0.05]			-0.08*	[-0.15; -0.00]
Witnessed a police assault							-0.29*	[-0.39; -0.18]	-0.24*	[-0.35; -0.14]
BIC	8140.4		8184.6		8181.0		8163.4		8127.0	
Variance: Intercept	0.36		0.36		0.36		0.36		0.36	
Variance: Year	0.54		0.56		0.54		0.57		0.55	
Variance: Year (squared)	0.04		0.05		0.04		0.05		0.04	
Variance: residual	0.55		0.54		0.55		0.54		0.55	
Number of observations	2911		2928		2928		2928		2909	
Number of respondents	799		800		800		800		799	

Note: Growth curve models estimated as multilevel models using R's package *lme4*. "Est." = estimates; "95 CI" = 95% confidence interval; "BIC" = Bayesian Information Criteria. * $p < 0.05$.

Results indicate that exposure to violence and aggression are associated with the process through which adolescents develop law-related attitudes. Respondents who were more exposed to neighborhood violence (e.g., listening to gunshots, witnessing or hearing about people other than police officers carrying guns, people being robbed, and people selling drugs on the streets) tended to have a slightly more negative development of legal legitimacy beliefs (a log-linear relationship described by the coefficient -0.07 in model 2A). Results also show that different types of vicarious police contact are associated with legal socialization. Adolescents who did or did not witness a police stop-and-frisk have non-distinguishable developments of legitimacy judgements over this four-year period, as this coefficient is not statistically different from zero in model 2B. On the other hand, witnessing a police officer arresting a member of the public using handcuffs was associated with the legal socialization process, as adolescents who are exposed to this kind of police practice at each time point, on average, have their scores of legitimacy decreased by 0.12 points (model 2C) – this coefficient remains statistically different from zero even after controlling for other types of vicarious police contact in model 2E. Crucially, exposure to police violence is correlated with the negative development of legitimacy beliefs. Witnessing a legal agent assaulting a member of the public at each time point is associated with a negative change in the scores of legal legitimacy of 0.29 points (model 2D) – a result that remains virtually unaltered in model 2E.

As outlined earlier in the paper, above and beyond individual exposure to violence, adolescents might be exposed to a *violent environment* (Sharkey, 2018). Table 6 displays results of four new three-level multilevel models assessing the developmental trajectories of legal legitimacy over time, but now adding a third level on top of growth parameters. With intercepts varying by school, school-level covariates can be included. Model 3A includes exposure to neighborhood violence, model 3B includes witnessing a police stop-and-frisk, model 3C includes witnessing a police arrest, and model 3D includes witnessing a police assault – always juxtaposing individual-level exposure and the average exposure among students attending the same school.

TABLE 6 Three-level models assessing the influence of school-level covariates on the development of legal legitimacy

	Model 3A		Model 3B		Model 3C		Model 3D	
	<i>Est.</i>	<i>95% CI</i>	<i>Est.</i>	<i>95% CI</i>	<i>Est.</i>	<i>95% CI</i>	<i>Est.</i>	<i>95% CI</i>
Intercept	4.13*	[3.78; 4.47]	3.78*	[3.30; 4.01]	3.80*	[3.59; 4.01]	3.74*	[3.62; 3.86]
Year	0.18*	[0.07; 0.30]	0.25*	[0.15; 0.35]	0.24*	[0.14; 0.34]	0.25*	[0.15; 0.35]
Year (squared)	-0.08*	[-0.11; -0.05]	-0.10*	[-0.13; -0.06]	-0.10*	[-0.13; -0.06]	-0.10*	[-0.13; -0.06]
<i>Time-constant covariates</i>								
Gender (1 = male)	0.07	[-0.02; 0.17]	0.06	[-0.04; 0.15]	0.07	[-0.03; 0.17]	0.08	[-0.01; 0.18]
Race (1 = White)	0.04	[-0.06; 0.14]	0.05	[-0.04; 0.15]	0.05	[-0.05; 0.14]	0.04	[-0.06; 0.13]
<i>Time-varying covariates</i>								
Exposure to neighborhood violence (log)	-0.07	[-0.13; 0.00]						
Witnessed a police stop-and-frisk			-0.09	[-0.18; 0.01]				
Witnessed a police arrest					-0.12*	[-0.19; -0.04]		
Witnessed a police assault							-0.27*	[-0.37; -0.16]
<i>School-level covariates</i>								
Average exposure to violence (log)	-0.55*	[-0.99; -0.10]						
Average exposure to police stops			-0.08	[-0.65; 0.49]				
Average exposure to police arrests					-0.23	[-0.65; 0.18]		
Average exposure to police assaults							-0.52	[-1.07; 0.02]
BIC	8149.0		8198.6		8193.9		8174.2	
Variance: Intercept (respondents)	0.35		0.35		0.35		0.35	
Variance: Year	0.54		0.56		0.54		0.57	
Variance: Year (squared)	0.04		0.05		0.04		0.05	
Variance: Intercept (school)	0.01		0.01		0.01		0.01	
Variance: residual	0.55		0.54		0.55		0.43	
Number of observations	2911		2928		2928		2928	
Number of respondents	799		800		800		800	

Note: Three-level models estimated using R's package *lme4*. "Est." = estimates; "95 CI" = 95% confidence interval; "BIC" = Bayesian Information Criteria. * p < 0.05.

While there is not a huge amount of variation between schools, results displayed in Table 6 indicate that environmental and cultural mechanisms may also play an important role in the legal socialization of young adolescents. Model 3A shows that respondents who study at schools where most other students reported high levels of exposure to neighborhood violence, above and beyond their own individual experiences, tend to have damaged developmental trajectories of beliefs about the legitimacy of the law. Interestingly, now that we have taken this account, individual exposure to neighborhood violence is not associated with legal socialization. This suggests that adolescents may to some degree be collectively adapting to a violent environment that involves citizen not police violence (Kirk & Papachristos, 2011). While being individually exposed to neighborhood violence might not harm their development of beliefs about the legitimacy of the law, adjusting for the environment, there could be a collective process through which citizen violence damages legal socialization.

Interestingly, table 6 displays different results when it comes to exposure to police aggression and violence. As in previous models, while witnessing a stop-and-frisk is not associated with legal socialization (model 3B), witnessing police arrests and assaults is correlated with the negative development of legitimacy beliefs. Unlike exposure to neighborhood violence, however, it is the individual experience of seeing a law enforcement agent arresting a member of the public or beating someone up that is most predictive of negative changes in legal legitimacy (-0.12 and -0.27 points, respectively). According to models 3C and 3D, attending schools where most other students witnessed aggressive or violent policing does not have predict respondents' legal socialization. This suggests that adolescents who individually experience inappropriate police behavior have an undermined development of judgements about the legitimacy of the law, but that is not necessarily a collective process.

7 | DISCUSSION

We have examined in this paper the process of legal socialization of adolescents aged 11 to 14 years who live in a city (São Paulo) in which there is idiosyncratic and violent policing (Oliveira, 2022), where the state's ability to control crime and maintain order is low (Adorno, 2013), and where residents of some neighborhoods face the threat of violence on a regular basis (Willis, 2015). It is through

childhood and adolescence that people start to develop law-related values and attitudes towards legal authority (Tyler & Trinkner, 2017). It is crucial to understand the processes through which children and adolescents come to understand the authority of the law. While previous work has highlighted the importance of several social and individual antecedents (e.g., Fagan & Tyler, 2005; Geller & Fagan, 2019; Nivette et al., 2015; 2019; Piquero et al., 2005; Trinkner & Cohn, 2014), there remain several important gaps in the legal socialization literature.

An assessment of the legal socialization process ideally requires longitudinal data and a life-course approach to understand the developmental trajectories of legal attitudes over time. A few studies have adopted this type of approach (e.g., Kaiser & Reisig, 2019; Mclean et al., 2019; Nivette et al., 2019; Piquero et al., 2005), but most studies that have focused on the development of attitudes towards the law and the legal institutions over time have been based in Western contexts, and a fair proportion of these have drawn on one specific sample of former youth offenders in the US: namely the Pathways to Desistance study (Mulvey, 2016). Life-course studies on the development of legitimacy beliefs over time using a general sample of adolescents are especially scarce. Nivette et al.'s (2019) examination of the developmental trajectories of legal cynicism and judgements of police performance among youths from Zurich, Switzerland, is an important exception, but they studied adolescents from a high-income country in the Global North. Some recent work has addressed legal socialization in Brazil (see, e.g., Jackson et al., 2022; Komatsu et al., 2020; Trinkner et al., 2020) and highlighted the role of neighborhood experiences and exposure to violence (Oliveira, 2022; Piccirillo et al., 2021), but these studies did not address trajectory of development of legitimacy beliefs.

Previous work has also neglected the study of the role that exposure to neighborhood and police violence may play on the development of judgements about the legitimacy of the law (see Fagan & Tyler, 2005, for an exception, albeit one based on cross-sectional rather than longitudinal data). This is surprising because exposure to violence can have several costs to social life (Sharkey, 2018). Studies have shown that individuals can over time come to adapt to a violent environment by developing cultural tools and strategies that allow them to cope (Harding, 2009) – e.g. they develop a cultural frame, in which the law is not binding and legal institutions and agents are viewed as disinterested and incapable of ensuring public safety (Bell, 2017; Kirk & Papachristos, 2011).

Yet, we know little about the roles that a violent environment may play in the developmental trajectories of legitimacy beliefs among children and adolescents. Additionally, we know little about the influence of exposure to forcible and violent police behavior on the legal socialization of children and adolescents. Previous work has addressed the association between police contact and aggressive policing strategies and young people's judgements about the legitimacy of legal authority (e.g., Fagan & Tyler, 2005; Geller & Fagan, 2019; Tyler et al., 2014). But there is little evidence on the influence of exposure to forcible and violent police behavior on the *developmental trajectories* of legitimacy beliefs over time. When adolescents are exposed to both neighborhood *and* police violence, they may be socialized to think that legal institutions do not provide security and protection to people in their neighborhood, that law enforcement agents are not interested in ensuring public safety, that social order is generally weak— as such, they may tend to develop a more skeptical view of the law and legal institutions.

We drew in this paper on data from the *São Paulo Legal Socialization Study*, a four-wave longitudinal survey of adolescents aged 11 to 14 years residing in Brazil's largest city between 2016 and 2019. We assessed the influence of exposure to neighborhood and police violence on the process of legal socialization, specifically the development of beliefs about the legitimacy of the law over time. In many ways, São Paulo is an ideal spot to study this topic. Legal socialization of adolescents in contexts where violence is a backdrop to aspects of everyday life (Cerqueira et al., 2020), where the threat of violence comes regularly from both highly bureaucratized criminal organizations and police officers alike (Willis, 2015), and where the police are viewed by some as “just another gang”, to be feared and coercively obeyed, found to be illegitimate, but nevertheless to be complied with (Jackson et al., 2022; Oliveira, 2022), could have specific characteristics that have been little explored by previous research.

Using a life-course approach on legal socialization and focusing on one of the largest cities in the Global South, we examined the influence of exposure to violence on the development of legitimacy judgements among adolescents. Like previous research in other contexts (e.g., McLean et al., 2019; Nivette et al., 2019), we showed that the average developmental trajectories of beliefs about the legitimacy of the law followed a nonlinear, inverse U-shaped trajectory, with scores of legal legitimacy

reaching their peak as respondents reached the age of 13, and then decreasing slightly. Crucially, we demonstrated that exposure to both neighborhood and police violence is directly associated with the legal socialization of young adolescents, undermining the process of internalization of law-related values. In a context in which the threat of violence from (state and non-state) authority figures is frequent and even palpable in some neighborhoods (Manso & Dias, 2018; Lessing & Willis, 2019), we have shown that growing up in an environment where crime and violence are relatively common, and where police officers behave aggressively and sometimes violently harms legal socialization, is associated with more negative developmental trajectories of legal legitimacy beliefs.

We started with exposure to neighborhood violence. Using an index based on adolescents' witnessing and/or hearing about events such as gunshots, people being robbed, people other than legal officers carrying guns, and people selling drugs on the streets, we showed that the more that respondents were individually exposed to citizen violence in their neighborhood, the less they tended to internalize a normatively grounded sense of duty to obey the law and a perception that the rule of law is active in society. However, the statistical effect shrank toward zero when exposure to police aggression and violence was adjusted for. Intriguingly, we showed that the more pervasive exposure to violence was in their school, the less individual students developed a sense that the law is legitimate. Studying in schools in which most other students were exposed to neighborhood violence was negatively associated with changes in beliefs about the legitimacy of the law – to a greater extent than individual-level exposure. This result suggests important influences from the environment on legal socialization. Exposure to a violent environment may be harmful to legal socialization because people – especially young adolescents – may develop cultural tools to adapt to their environment (Harding, 2009). Through social interaction with their peers, they may develop shared understandings about the functioning of the legal institutions, even if they themselves did not witness neighborhood violence.

We then moved to exposure to aggressive and violent police behavior. São Paulo Military Police officers are trained for war-like situations, and it is not uncommon for them to threaten to use force and draw their guns even in mundane police-citizen interactions (Oliveira, 2022). We used three different measures of vicarious police contact, which indicate increasing levels of forcible police conduct: witnessing a police stop-and-frisk, which is a common task of police work but potentially a

relatively aggressive situation in this context; witnessing a police arrest with handcuffs, which is still a basic legal prerogative in policing, but nonetheless a more forcible conduct, especially for young adolescents; and witnessing a police officer assaulting a suspect, a case of outright violence. Across these different models, watching a law enforcement agent stop and search a member of the public was not associated with the development of beliefs about the legitimacy of the law. Watching a police arrest and, to a much greater extent, watching a police assault were: exposed respondents tended to have more negative developmental trajectories of legitimacy judgements.

7.1 | Limitations

A number of limitations to our study must be acknowledged. First, we cannot estimate the causal effects of exposure to neighborhood and police violence on developmental trajectories of legal legitimacy beliefs. While substantively interesting, a different research design would be necessary to identify causal effects. Future research should incorporate advancements in causal inference methods in the legal socialization literature. Second, we rely exclusively upon self-reported survey data, not on objective measures of exposure to neighborhood and police violence. While individual perceptions seem to be important, future research should incorporate other sources of data to validate some of the results we found in this study. Third, while the school-level statistical effect of neighborhood violence is consistent with the idea that legal legitimacy is partly a shared cultural frame (whereby students come, to some degree, to collectively adapt to a violent environment outside of school), we can only infer that legitimacy beliefs are to some degree a collective attribute, based in part on a collective adaptation to features of their social environment. Respondents' legitimacy beliefs were not strongly clustered within schools, possibly due to small within-school sample sizes, and it is not clear whether cultural tools, if they are indeed at play here, were developed at the school level or at some other aggregate level (e.g., neighborhood). We were, moreover, limited by sampling characteristics of the SPLSS data, and future research should address cultural issues and collective processes in the legal socialization literature. Finally, our results pertain to a specific population of adolescents residing in São Paulo, a city in the Global South where pervasive violence is a constituent part of sociability. The extent to which our

results can be generalized to other contexts is not clear, and future research should address this topic in several other contexts – both in the Global North and the Global South.

8 | FINAL WORDS: WHERE NEXT?

Overall, we have taken a life-course approach to studying the influence of exposure to neighborhood and police violence on the legal socialization of adolescents aged 11 to 14 in Brazil's largest city between 2016 and 2019 (Trinkner et al., 2020; Piccirillo et al., 2021). Adopting a life-course approach and examining individual developmental trajectories of adolescents' beliefs in the legitimacy of the law over time, our findings indicated that school-level exposure to neighborhood violence (e.g., listening to gunshots, witnessing or hearing about people being robbed, carrying guns, or selling drugs) is associated with the negative development of legitimacy perceptions, and that while witnessing a police stop-and-frisk does not seem to alter the legal socialization process, seeing an officer assaulting a member of the public is associated with negative developmental trajectories of legitimacy beliefs.

The influence of exposure to neighborhood violence and police violence and aggression on legal socialization seems to have different mechanisms. Our findings are consistent with the idea that exposure to a violent *environment* (Sharkey, 2018) may undermine developmental trajectories of legitimacy beliefs – adolescents who study at schools where most other students were exposed to violence, regardless of individual-level exposure, tended to have an undermined development of legitimacy. When it comes to exposure to police behavior, the opposite seems to be true: individual exposure to forcible police conduct (e.g., witnessing a police arrest) or to outright violent police behavior (e.g., witnessing a police assault) may harm developmental trajectories of judgements about the legitimacy of the law, not studying at a school where most other students also saw officers engaging in such conducts.

To close, the context of the study was the city of São Paulo, a large city in the Global South where confrontational and aggressive policing methods are common, where cases of police violence are not rare (Zanetic et al., 2016), and people are frequently threatened with the use of force by authority figures – both legal and extralegal ones (Willis, 2015). By adopting a life-course approach to examine the influence of exposure to neighborhood and police violence on the developmental trajectories of

beliefs about the legitimacy of the law in Brazil's largest city, this study contributes to a growing international literature. More research on legal socialization should (i) examine the role of exposure to violence, both citizen and police violence, and (ii) focus on other Global South contexts with weak state systems.

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