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DOI: <https://doi.org/10.1016/j.jpeds.2018.12.056>

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ZORA URL: <https://doi.org/10.5167/uzh-173353>

Journal Article

Accepted Version

Originally published at:

Averdijk, M; Ribeaud, Denis; Eisner, Manuel (2019). Childhood Predictors of Violent Victimization at Age 17 Years: The Role of Early Social Behavioral Tendencies. *Journal of Pediatrics*, 208:183-190.e1.

DOI: <https://doi.org/10.1016/j.jpeds.2018.12.056>

## **Childhood predictors of violent victimization at age 17: The role of early social behavioral tendencies**

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### **Author Note**

The research reported in this manuscript was financially supported by the Swiss National Science Foundation, the Jacobs Foundation, the Swiss Federal Office of Public Health, the Canton of Zurich Ministry of Education, and the Julius Baer Foundation. The authors would like to express their sincere thanks to the youths, parents, and teachers participating in the study. Moreover, the authors are grateful to the interviewers and undergraduate students for their help in data collection and coding.

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### **Conflict of Interest / Disclosure**

The study sponsors were not involved in the study design; the collection, analysis, and interpretation of data; the writing of the report; or the decision to submit the manuscript for publication. The first draft of the manuscript was written by the first author. None of the authors was given a honorarium or grant to produce the manuscript. All authors are employed and paid by their respective institutes and universities, which in turn received grants from mentioned funding agencies for the z-proso study.

### Abstract

**Objective:** To assess how early social behavioral tendencies affect the risk of violent victimization in late adolescence.

**Study design:** We analyzed five waves of data from the Zurich Project on the Social Development from Childhood into Adulthood (z-proso), a longitudinal sample of Swiss first graders ( $N = 1,138$ ). Early social behavioral tendencies were measured at age 7 and included internalizing problems, externalizing behavior, prosocial behavior, negative peer relations, competent problem solving, dominance, and sensation seeking. Path analyses were conducted of the association between these tendencies and violent victimization at age 17, and mediation through intermediate victimization at ages 11, 13, and 15 was examined.

**Results:** Several childhood social behavioral tendencies predicted victimization 10 years later. Though this was the case for both genders, the number and type of significant risk factors differed. For males, sensation seeking, externalizing behavior, high prosociality, and negative peer relations at age 7 increased later victimization, whereas for females, dominance and externalizing behavior were predictive. In addition, results showed that the effects of early risk factors were mediated by intermediate victimization, showing that differences in victimization risk in early adolescence are carried forward into late adolescence.

**Conclusion:** Childhood social behavioral tendencies predict victimization 10 years later. Incorporating this finding into early prevention programs could reduce victimization in the long run.

Evidence consistently suggests that adolescents face a comparatively high risk of violent victimization<sup>[1,2]</sup> and that violence against adolescents can have detrimental consequences, including mental health problems, substance use, and low educational attainment.<sup>[3]</sup> To predict victimization and determine where to focus prevention efforts, most prior research has focused on situational factors, such as the places and people potential victims encounter.<sup>[4]</sup> Although this has been and is a fruitful research field, research has pointed towards the importance of non-situational characteristics, notably a victim's socio-psychological characteristics, which may unwillingly predispose some people to victimization.<sup>[5]</sup>

Various studies have already shown the importance of these characteristics in predicting criminal victimization in the short-term. For example, research has shown that low self-control is associated with victimization.<sup>[6]</sup> Developmental research indicates that internalizing problems, lacking social competencies, and heightened reassurance seeking disturb interpersonal and peer relationships,<sup>[7,8]</sup> thereby unwillingly putting youths at risk for bullying.<sup>[9]</sup> In addition, social isolation and lacking social support may reinforce the label of being an easy prey.<sup>[10,11]</sup> Finally, research has shown that externalizing behavior increases victimization due to shared psychological, biological, or environmental conditions or because it sets processes, including disturbed social relationships, in motion that increase victimization.<sup>[12]</sup>

In this paper, we draw from developmental perspectives and victimization research to ask whether childhood social behavioral tendencies predict violent victimization in late adolescence. Although the answer to this question is largely unclear, probably in large part due to a lack of longitudinal data, several findings suggest it may be positive.<sup>[13]</sup> For example, research has shown considerable stability in youths' social behavioral profiles,<sup>[14]</sup> suggesting that the short-term relation between such profiles and victimization may extend into a long-term one. In addition, the notion of developmental cascades pervades thinking about behavioral stability in positing that early risks may accumulate and escalate over time.<sup>[15]</sup> Furthermore, research has shown that there is considerable stability in violent victimization over time,<sup>[16]</sup> begging

the question whether this is unwillingly driven by underlying traits.

We investigated three related issues. The first assessed whether early social behavioral tendencies are associated with violent victimization risk. Second, we examined possible pathways through which early predictors affect victimization risk.<sup>[17]</sup> Based on the simple and straightforward proposition that differences in victimization risk in early adolescence may be carried forward, we examined whether the relation between childhood social behavioral tendencies and victimization in late adolescence is mediated by victimization in early and middle adolescence. Third, we explored whether results differed between males and females, because analyses have attested to the gendered nature of victimization.<sup>[18]</sup> These issues are not only of theoretical import, but may also have implications for prevention purposes, as they may suggest that early social interventions can reduce the long-term risk of victimization.<sup>[19]</sup>

### Data

Data were drawn from five waves of the combined longitudinal and intervention study, the Zurich Project on the Social Development from Childhood into Adulthood.<sup>[20]</sup> A sample of 56 schools was drawn in Zurich, Switzerland, after stratification by enrollment size and socioeconomic background. The final target sample was all 1,675 first graders. The interventions had little effect on social behavior.<sup>[21,22]</sup> The participation rate in the first data collection (2004/05,  $M_{age} = 7.45$ ;  $SD = 0.39$ ) was 81% for the children ( $N = 1,361$ ), 74% for the parents ( $N = 1,240$ ), and 81% for the teachers ( $N = 1,350$ ). Participation of the original target sample in the later waves used in this paper was as follows: 68.5% at wave 4 ( $N = 1,148$ ;  $M_{age} = 11.33$ ;  $SD = .37$ ), 81.6% at wave 5 ( $N = 1,366$ ;  $M_{age} = 13.67$ ;  $SD = .37$ ), 86.4% at wave 6 ( $N = 1,447$ ;  $M_{age} = 15.44$ ;  $SD = .36$ ), and 78.0% at wave 7 ( $N = 1,306$ ;  $M_{age} = 17.45$ ;  $SD = .37$ ).

In line with local data protection regulations, active parental consent was obtained before wave 1 and again before wave 4. In waves 5 and 6, the parents provided passive consent. In wave 1, 45-minute computer-assisted personal child interviews were conducted by trained in-

interviewers at school. Starting wave 4, the youths completed a written questionnaire of approximately 90 minutes duration. Computer-assisted parent interviews were conducted at the parents' home. Teachers completed a questionnaire and returned it by mail.

### **Measure of Violent Victimization**

Six types of self-reported violence in the preceding 12 months were measured at wave 7: robbery, assault with injury with a weapon or object, assault with injury without a weapon or object, sexual assault, simple assault, and sexual harassment. The first four were measured on a count scale; the last two were part of a peer victimization questionnaire using a frequency scale.<sup>[23]</sup> Items were recoded into a dichotomy of 0 („did not experience violence“) and 1 („experienced violence“) and summed into a variety score. 910 youths said they had not been victimized, 307 had experienced one type of victimization, 67 two types, 19 three types, and 1 person four types. In order to avoid a disproportionate influence of the latter person, prevalence was capped at 3. Capping did not affect results.

Similar instruments were used at waves 4, 5, and 6, though there were two differences with wave 7. First, in waves 4, 5, and 6, all types of victimization were asked in reference to violence by peers. This was not considered problematic as research suggests that the vast majority of physical and sexual violence at that age is inflicted by peers.<sup>[24]</sup> Furthermore, at wave 4, sexual victimization was not included due to the increasing prevalence as adolescence progresses and ethical considerations regarding asking about sexual victimization at age 11.

### **Measures of Social Behavior and Relationships**

**Social Behavior Questionnaire (SBQ).** The teachers, children, and parents completed the SBQ at wave 1.<sup>[25]</sup> Items for the parents and teachers included 5-point Likert scales. The children were shown drawings of a child carrying out specific acts and asked whether they sometimes do what is shown. A for children easily understandable yes/no format with good reliability and validity was used.<sup>[26]</sup> Seven to 9 SBQ items per informant measured internalizing

symptoms, i.e., anxiety and depression (e.g., “The child seems nervous and tense”). Externalizing behavior included 11 to 12 items per informant for aggression (e.g., “The child physically attacks others”), 8 to 9 for attention deficit hyperactivity disorder (e.g., “The child cannot sit still, is restless, or overactive”), and 6 to 9 for non-aggressive externalizing behavior (e.g., “The child tells lies and cheats”). Seven to 10 items per informant measured prosocial behavior (e.g., “The child comforts other children when they are crying or upset”).

Scores were z-standardized and averaged. Internal consistencies ranged from .68 to .79 for the parent, .81 to .94 for the teacher, and .58 to .72 for the child. As usual for multi-informant behavioral assessment,<sup>[27]</sup> cross-informant correlations yielded low scale reliability at .22 (internalizing problems), .38 (externalizing problems), and .38 (prosocial behavior). Because each informant provides incrementally valuable, non-overlapping information<sup>[28]</sup> and combining scores of all informants is thought to yield the most valid and reliable estimates,<sup>[29]</sup> the cross-informant measures were used.

**Negative Peer Relations.** At wave 1, three items from the teacher questionnaire measured peer relations: „The child is popular“, „The child is bullied“, and „The child is avoided and isolated.“ Answer categories ranged from 1 (“does not apply at all”) to 5 (“very much applies”). We reverse-coded the first item and computed a composite scale (Cronbach  $\alpha = 0.73$ ).

**Competent Problem Solving.** At wave 1, the children responded to four hypothetical vignettes, which were adapted from prior research.<sup>[30]</sup> playing on a swing, participating in a game, laughing at someone, and stealing a ball. The scenarios were presented as three-frame sequences of gender-matched cartoons. For the first vignette, the child was read the following text: “Pretend that this is you and that this is another child. The other child has been on the swing for a long time and doesn’t seem to want to share the swing with you. You would really like to play on the swing. What could you say or do so that you could play on the swing?”

Responses were audiotaped and coded into: (a) aggressive strategy (e.g., “I’d just push him off the swing”), (b) socially competent strategy (e.g., “I’ll ask to take turns”), and (c) other

strategy (authority-oriented, irrelevant). Because we were interested in social behavior in general, we used the socially competent strategies. Two coders rated all transcripts. Interrater agreement (Krippendorff's alpha) averaged at 0.79. Categorical answers were dichotomized and the matched pairs averaged across both coders, after which a mean score was calculated.

**Dominance.** One item from the teacher survey measured dominance at wave 1: „The child dominates others.” Answer categories ranged from 1 (“does not apply at all”) to 5 (“very much applies”). Although single-item measures are less encompassing compared to multi-item measures, studies have found single-item psychological measures to be acceptable.<sup>[31,32]</sup>

**Sensation Seeking.** Sensation seeking<sup>[33]</sup> was included as an aspect of self-control deficits because it has been identified as a core component of low self-control. It was measured at wave 1 through a board game<sup>[34]</sup> where the children passed through several stops and chose between adventuresome (e.g., starting the trip with a fast motorbike) and secure options (e.g., taking a funny locomotive) (9 items, Cronbach  $\alpha = 0.68$ ).

**Control variables.** These included ethnicity (“0” for two non-Swiss parents and “1” for at least one Swiss parent) and socio-economic status (SES). SES was based on an International Socio-Economic Index of occupational status derived from the caregivers' professions.<sup>[35]</sup>

### Statistical Analyses

We included youths who participated at wave 1 and 7, when the central predictors and outcomes were measured ( $N = 1,138$ ; 67,9% of the target sample). Across all data-points, 4.3% was missing. Attrition was higher for some immigrant background groups.<sup>[36]</sup> We used robust full information maximum likelihood estimation (FIML) to handle the missing data.

We performed path models in Mplus<sup>[37]</sup> to examine three issues. First, we assessed direct relations between social behavioral characteristics and victimization at age 17. Second, we examined pathway models where intermediate victimization mediated the effects of early characteristics on later victimization. Third, we conducted analyses by gender. We used maximum likelihood estimation with robust standard errors to account for deviations from multivariate



non-normality. We corrected for clustering within classes to control bias. Due to dispersion in the regressions on victimization among all youths and males, we modeled these outcomes using a negative binomial model. For victimization among females, there was no dispersion; we modelled this outcome using Poisson regression. Mplus does not provide absolute fit statistics for this model. Table V (online only) displays available fit indices.

## **Results**

### **Descriptive statistics**

Table I presents the prevalence of violent victimization at age 17. Overall, 31% of participants experienced violent victimization. Sexual harassment and physical violence were the most common, the former more among females and the latter among males. Sexual assault, assault with weapon, robbery, and assault without weapon were less often reported but still affected parts of the sample. Table II describes the sample and displays basic statistics for the study variables, for all youths and by gender. Table III displays bivariate correlations.

### **Substantive Analyses: Pathway models**

Results of the pathway models are displayed in Table IV. As our model required (Figure 1), we included both the direct pathways of early social behavioral tendencies to victimization at ages 11 and 17, as well as direct relations between victimization at age 11, 13, 15, and 17.

The upper part of Table IV (part 1a) shows the direct relations between early tendencies and age 17 victimization. The results for all youths, males, and females are displayed separately. For all youths, low internalizing problems, high sensation seeking, being female, and prior victimization increased victimization risk. Sensation seeking affected victimization for boys only, whereas for girls, dominance towards others increased victimization risk at age 17.

Parts 1b and 1c of the table show that prior victimization had a highly significant effect on later victimization: having experienced victimization at age 11 increased victimization risk at age 13. In turn, victimization at age 13 increased the likelihood of victimization at age 15.

Part 1d assessed the relation between early characteristics and age 11 victimization. For

males, externalizing behavior, high prosocial behavior, and negative peer relations increased victimization at age 11. For females, early externalizing behavior did.

Next, we identified the pathways through which early tendencies affected later victimization (“indirect effects”, part 2, Table IV). The relation between externalizing behavior and age 17 victimization was mediated by victimization at ages 11, 13, and 15 for both genders. For males, there was a mediation pathway from higher prosocial behavior at age 7 to age 17 victimization, through victimization at ages 11, 13, and 15. Victimization at ages 11, 13, and 15 also mediated the pathway from negative peer relations to age 17 victimization for males.

As a robustness check, we estimated separate models with uniform measures of victimization across all waves, i.e., excluding sexual victimization (Table VI online only). Compared to Table IV, evidence for direct effects of early tendencies on age 17 victimization was somewhat stronger and effects on age 11 victimization were similar. Indirect effects were also similar, except for the effects of negative peer relations for all youths and the effect of externalizing behavior for males, which were only significant at the  $p < .10$  level with these measures.

In sum, the results demonstrate that several behavioral tendencies at age 7 predicted victimization 10 years later. Competent problem solving was the only predictor that did not predict victimization directly or indirectly across the three models. Early tendencies predicted later victimization for both genders, but there were some difference between males and females. Whereas sensation seeking, externalizing behavior, high prosociality, and negative peer relations at age 7 predicted age 17 victimization for males either directly or indirectly via intermediate victimization, it was dominance and externalizing that were predictive for females.

## Discussion

Prior research has shown that social behavior is associated with the likelihood of victimization. This paper extended this line of research in a number of important ways. First, we addressed the long-term relation between social behavioral tendencies and victimization risk by asking whether early social behavioral tendencies measured at age 7 affected victimization at

age 17. Second, we examined whether the relation between social behavioral tendencies and victimization in late adolescence was mediated by victimization in early and middle adolescence. Third, we examined all relations for males and females separately.

Taken together, the results show that several early tendencies are related to victimization risk ten years later. Given the more dominant situational perspective in research on criminal victimization, these findings are remarkable because they suggest the potential importance of person-specific factors in unwillingly contributing to variance in victimization risk. Traditionally, criminological victimization research has had a situational focus, explaining victimization risk through situational and structural variables. In contrast, developmental perspectives emphasize early risks and developmental processes. The current paper drew from these perspectives by focusing on the role of victims' early social behavioral characteristics and thereby provides a novel lens on criminal victimization. The results confirm the fruitfulness of this approach, by showing that early risks help explain criminal victimization ten years later, suggesting that the sole focus on situational variables provides an incomplete understanding of criminal victimization. Thus, traditional situational perspectives need to be supplemented and combined with developmental perspectives.

In addition, the results suggest support for a life course model of criminal victimization in which the increased victimization risk of children associated with social behavioral tendencies is carried forward into late adolescence. Thus, the relation between early social behavioral tendencies and later victimization is partly due to the maintenance over time of the association between early risks and victimization in early adolescence. In other words, these risks may be early indicators for a long-term pattern of victimization. This is consistent with developmental theory positing that children's skills and abilities condition later development<sup>[38]</sup> and with work on stress proliferation,<sup>39</sup> where initial stressors give rise to additional stressors, multiplying over the life course. Ultimately, these can create patterns of cumulative disadvantage with

systematic inequalities in early risks compiling and compounding over the life course and promoting widening gaps and disparities in adverse life outcomes in the long run.

Although these overall findings were true for both genders, the number and types of risk factors and pathways associated with criminal victimization were somewhat different for males and females. For females, the profile of those who were most at risk for victimization was that of displaying social dominance or externalizing behavior. The profile for males was somewhat different. On one hand, higher levels of sensation seeking increased victimization risk measured ten years later, which is in line with research that has shown a robust relation between low self-control and victimization,<sup>[6]</sup> although this literature has only examined short-term relations. Sensation seeking is generally interpreted as implying risky behavior, predisposing individuals to involvement in risky environments and situations in which victimization risk is high. The findings also suggest that boys with high levels of prosocial behavior, and those who are bullied, isolated, and unpopular early on have an increased risk of victimization in early adolescence, which is then transferred to increased victimization risk later on.

To some extent, our findings may be indicative of behaviors deviating from gender norms increasing victimization. In social interaction, they may be seen as threatening and provocative, potentially leading to conflict and victimization. Developmental research suggests that gender atypicality may be perceived as norm violation, increasing vulnerability for bullying and peer victimization.<sup>[40,41]</sup> Our findings suggest that the same may be the case for criminal violence. For females, externalizing behavior and dominance may fall into this category. For males, the same may include prosocial behavior. Prosocial behavior includes voluntary behavior intended to benefit another,<sup>[42]</sup> such as sharing, helping, and comforting, and related emotional responses such as empathy. Compared to females, males are expected to be independent and achievement oriented rather than responsive and empathic.<sup>[43]</sup> Combined with problematic social relations, this may increase vulnerability especially in adolescent peer groups where masculinity norms are important and a lack of strong image or protection by friends may

leave one vulnerable. These are speculations, however, that should be further examined.

Regardless of gender, prior victimization was consistently related to later victimization. Although it was beyond our purpose to explicitly study repeat victimization, there are two potentially complementary ways in which prior and later victimization are related.<sup>[44]</sup> First, a general propensity for victimization may underlie both prior and later victimization. Second, prior victimization may directly exacerbate the risk of later victimization by instigating a process of increased vulnerability. For example, victims may use maladaptive coping strategies, including substance use,<sup>[26]</sup> which in turn increases the risk of repeat victimization. Both of these mechanisms may lead to vicious cycles of victimization that can extend into the long-term.

One unexpected finding was that lower levels of internalizing problems were related to increased victimization. This is in contrast to prior research on depression.<sup>[45,46]</sup> One explanation is that this could be an isolated result as bivariate results show that the association between internalizing problems and victimization at ages 11, 13, 15 is positive. Second, it is possible that early anxiety sets children on a pathway towards displaying less risky lifestyles later in life. It is well-established in criminology that risky lifestyles increase victimization risk.<sup>4</sup>

An important question is what our study means for prevention. Our results suggest the importance of individual factors in the etiology of victimization. Traditionally, crime prevention has either focused on risk factors for delinquency or on situational interventions, such as neighborhood- or place-based programs, whereas experimental victimization programs have been relatively rare.<sup>[47]</sup> Our results suggest that the latter programs hold much promise and are necessary within a comprehensive prevention framework. Especially the integration of individual programs focused on early risks with situational ones seems essential for effective community-based interventions to prevent criminal victimization among adolescents.

It seems reasonable to assume that if early risks affect later victimization, programs that mitigate the effects of or reduce early risks have the potential to reduce not only later delin-

quency, but criminal victimization as well. Although randomized controlled trials of interventions targeting child problem behavior have shown positive results and may also have the potential to affect long-term victimization outcomes, two programs included in z-proso were of only limited success in reducing problem behavior.<sup>[21,22]</sup> To prevent victimization, it might be helpful to specifically include elements that address gender role bias. These have been shown to reduce gender stereotyping.<sup>[48,49]</sup> However, trials with long-term follow-up periods are rare, and few if any have been related to criminal victimization. Future work that relates such early social behavioral interventions to long-term patterns in criminal victimization is therefore highly encouraged.

In addition, the finding that intermediate victimization mediates the pathway between early risks and later victimization yields questions as to how cycles of victimization and stress proliferation can be broken and increasing disparities over the long run prevented. Research has shown that helping victims increase their resilience, such as through psychosocial treatment programs, can increase well-being.<sup>[50]</sup> In addition, programs that target repeat victimization can reduce crime, although their effects on violence remain under-studied.<sup>[51]</sup> Nevertheless, this is a promising area that should be considered to interrupt cycles of victimization.

This study was limited in several ways. First, we studied a limited set of predictors that has received most support in the literature. However, future research on other predictors is encouraged, including impulsivity, intelligence, callous-unemotional traits, or hostile attribution bias, which were not available in our study at age 7. Second, although our results suggested more similarities than differences between the early predictors of non-sexual and sexual victimization, we did not perform explicit tests, and questions regarding differences in the etiology of non-sexual and sexual victimization remain an issue for future research. Finally, our sample came from Switzerland, where rates of violent victimization among adolescents are relatively low, although rates of assault are comparable to some other Western countries, such

as the US,<sup>[52]</sup> and rates of sexual victimization are similar to other countries.<sup>[25]</sup> Although research does not necessarily suggest that predictors of victimization in Switzerland are different than elsewhere,<sup>[53]</sup> it is unclear whether our results are generalizable beyond Switzerland. Replication in other countries is therefore recommended.

Notwithstanding these limitations, our results suggest that there is merit in a life-course perspective on violent victimization focusing on early tendencies. Although there are very few studies that have considered the role of childhood predictors in later criminal victimization, our study suggests that such factors predict it more than 10 years later, either directly or through prior victimization pathways. Future work that replicates our results, includes additional early predictors, and teases out the responsible mechanisms is highly desirable.

*Table I. Prevalence of violent victimization at age 17 (N = 1,138).*

	All	Males	Females
Violent victimization	31%	23%	39%
Per crime-type			
Robbery	3%	4%	2%
Assault with weapon	2%	3%	1%
Assault without weapon	4%	6%	3%
Sexual assault	1%	0%	1%
Physical violence	10%	13%	6%
Sexual harassment	20%	6%	33%



Table II. Descriptive statistics.

Variable	Mean (SD)			Range
	All ( <i>N</i> = 1,138)	Males ( <i>N</i> = 575)	Females ( <i>N</i> = 563)	
<i>Outcome (Wave 7)</i>				
Victimization	0.39 (0.67)	0.32 (0.66)	0.47 (0.67)	0–3
<i>Predictors (Wave 1)</i>				
Social behavior and relationships				
Internalizing problems	0.00 (0.61)	-0.03 (0.62)	0.03 (0.60)	-1.47–2.07
Externalizing behavior	0.00 (0.69)	0.20 (0.72)	-0.21 (0.60)	-1.42–3.00
Prosocial behavior	0.01 (0.65)	-0.18 (0.67)	0.21 (0.57)	-2.96–1.55
Negative peer relations	1.72 (0.70)	1.75 (0.70)	1.70 (0.71)	1–5
Competent problem solving	0.72 (0.27)	0.67 (0.29)	0.76 (0.24)	0–1
Dominance	1.54 (0.94)	1.51 (0.91)	1.57 (0.97)	1–5
Sensation seeking	0.57 (0.25)	0.68 (0.22)	0.47 (0.23)	0–1
At least one Swiss parent	0.55 (0.50)	0.58 (0.49)	0.53 (0.50)	0–1
SES	49.87 (19.05)	50.76 (19.65)	49.0 (18.39)	16–88
<i>Mediators</i>				
Wave 4, Victimization	0.86 (1.05)	1.02 (1.11)	0.70 (0.97)	0–4
Wave 5, Victimization	0.73 (0.97)	0.81 (1.03)	0.64 (0.90)	0–4
Wave 6, Victimization	0.59 (0.85)	0.55 (0.88)	0.62 (0.81)	0–4

NOTE: SD = Standard deviation

Table III. Bivariate associations.

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Age 17 vic- timization													
2 Internalizing problems	-.027												
3 Externalizing problems	.019	.399**											
4 Prosocial be- havior	.047	-.090**	-.313**										
5 Peer relations	.046	.298**	.325**	-.250**									
6 Competent problem solv- ing	-.018	-.032	-.141**	.153**	-.055+								
7 Dominance	.084**	.087**	.350**	-.060*	.272**	-.012							

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8	Sensation seeking	.038	-.001	.269**	-.150**	.031	-.121**	.091**						
9	Swiss	.013	-.073*	.095**	.020	-.148**	.022	-.002	.047					
10	Sex (female)	.115**	.050†	-.298**	.300**	-.036	.165**	.032	-.412**	-.050				
11	SES	-.024	-.046	.002	.026	-.115**	-.006	-.011	-.044	.417**	-.048			
12	Age 11 victimization	.147**	.088**	.177**	-.008	.101**	-.025	.030	.095**	.028	-.148**	.048		
13	Age 13 victimization	.183**	.063*	.126**	-.058†	.020	-.061*	.009	.100**	.025	-.087**	-.071*	.270**	
14	Age 15 victimization	.287**	.072*	.096**	.028	.033	-.008	.040	.029	.038	.042	-.024	.206**	.324**

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†  $p < .10$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$

Table IV. Pathways model of Age 17 Victimization on Age 7 Predictors and Prior Victimization.

Variable	All (N = 1,138)			Males (N = 575)			Females (N = 563)		
	B	(SE)	STD	B	(SE)	STD	B	(SE)	STD
<b>1. Direct Effects</b>									
1a. Effects on age 17 Victimization									
Internalizing problems	-0.216*	0.090	-0.261	-0.246	0.161	-0.260	-0.183†	0.106	-0.252
Externalizing behavior	0.069	0.089	0.094	0.030	0.147	0.036	0.036	0.114	0.049
Prosocial behavior	0.087	0.079	0.112	-0.001	0.110	-0.001	0.164	0.109	0.212
Negative peer relations	0.096	0.074	0.133	0.260†	0.143	0.308	0.050	0.086	0.081
Competent problem solving	-0.191	0.180	-0.101	-0.502†	0.263	-0.246	0.207	0.247	0.113
Dominance	0.079	0.051	0.145	-0.083	0.102	-0.129	0.178**	0.055	0.394
Sensation seeking	0.588**	0.216	0.289	1.284**	0.424	0.485	0.295	0.261	0.156
Sex (female)	0.531**	0.111	0.523	--	--	--	--	--	--
Swiss	0.040	0.108	0.039	0.139	0.190	0.116	-0.090	0.126	-0.103
SES	-0.001	0.003	-0.040	-0.006	0.005	-0.214	0.004	0.004	0.152

Age 15 Victimization	0.425**	0.041	0.711	0.455**	0.062	0.680	0.434**	0.054	0.808
1b. Effects on age 15 Victimization									
Age 13 Victimization	0.282**	0.033	0.322	0.228**	0.044	0.265	0.367**	0.045	0.405
1c. Effects on Age 13 Victimization									
Age 11 Victimization	0.253**	0.034	0.275	0.245**	0.047	0.265	0.249**	0.051	0.268
1d. Effects on Age 11 Victimization									
Internalizing problems	0.056	0.056	0.032	0.102	0.086	0.057	0.026	0.075	0.016
Externalizing behavior	0.213**	0.060	0.140	0.231**	0.090	0.149	0.191*	0.081	0.117
Prosocial behavior	0.143**	0.055	0.088	0.228**	0.069	0.138	0.021	0.088	0.012
Negative peer relations	0.110*	0.052	0.074	0.162*	0.078	0.102	0.043	0.070	0.031
Competent problem solving	-0.004	0.130	-0.001	-0.061	0.187	-0.016	0.101	0.170	0.025
Dominance	-0.032	0.037	-0.028	-0.048	0.060	-0.040	-0.010	0.046	-0.010
Sensation seeking	0.124	0.146	0.029	0.053	0.223	0.011	0.182	0.200	0.044
Sex (female)	-0.249**	0.077	-0.118	--	--	--	--	--	--
Swiss	0.011	0.079	0.005	0.134	0.117	0.059	-0.118	0.107	-0.061
SES	0.003	0.002	0.051	0.006*	0.003	0.112	-0.001	0.003	-0.018

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**2. Indirect effects**

Internalizing problems->Age 11 Vict -> Age 13 Vict->Age 15 Vict->Age 17 Vict	0.002	0.002	n.a.	0.003	0.002	n.a.	0.001	0.003	n.a.
Externalizing->Age 11 Vict -> Age 13 Vict->Age 15 Vict->Age 17 Vict	0.006**	0.002	n.a.	0.006*	0.003	n.a.	0.008*	0.004	n.a.
Prosocial behavior->Age 11 Vict -> Age 13 Vict->Age 15 Vict->Age 17 Vict	0.004*	0.002	n.a.	0.006*	0.003	n.a.	0.001	0.003	n.a.
Negative peer relations->Age 11 Vict -> Age 13 Vict->Age 15 Vict->Age 17 Vict	0.003*	0.002	n.a.	0.004†	0.002	n.a.	0.002	0.003	n.a.
Social problem solving->Age 11 Vict -> Age 13 Vict->Age 15 Vict->Age 17 Vict	0.000	0.004	n.a.	-0.002	0.005	n.a.	0.004	0.007	n.a.
Dominance->Age 11 Vict -> Age 13 Vict->Age 15 Vict->Age 17 Vict	-0.001	0.001	n.a.	-0.001	0.002	n.a.	0.000	0.002	n.a.
Sensation seeking->Age 11 Vict -> Age 13 Vict->Age 15 Vict->Age 17 Vict	0.004	0.005	n.a.	0.001	0.006	n.a.	0.007	0.008	n.a.

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NOTE: Vict = Victimization. STD = Standardized coefficient. †  $p < .10$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$

*Table 5 online only. Fit statistics reported in Mplus for Pathways Model*

	All participants	Males	Females
Loglikelihood	-16012.618	-8150.658	-7554.298
Scaling correction factor for MLR	1.102	1.058	1.075
AIC	32123.235	16395.317	15200.596
BIC	32370.050	16599.972	15399.927
Sample-size ad- justed BIC	32214.411	16450.767	15253.900

*Table 6 online only. Pathways model of Age 17 Victimization on Age 7 Predictors and Prior Victimization for Non-Sexual Violent Victimization.*

Variable	All ( <i>N</i> = 1,138)	Males ( <i>N</i> = 575)	Females ( <i>N</i> = 563)
<b>1. Direct Effects</b>			
1a. Effects on age 17 Victimization			
Internalizing problems	-0.377*	-0.360†	-0.335
Externalizing behavior	0.242†	0.135	0.481*
Prosocial behavior	-0.013	-0.030	0.090
Negative peer relations	0.302*	0.324*	0.244
Competent problem solving	-0.478†	-0.534†	-0.255
Dominance	0.016	-0.077	0.190
Sensation seeking	0.875*	1.297**	0.185
Sex (female)	-0.237		
Swiss	-0.024	0.217	-0.500
SES	-0.006	-0.008	-0.002
Age 15 Victimization	0.478**	0.410**	0.645**
1b. Effects on age 15 Victimization			
Age 13 Victimization	0.258**	0.206**	0.300**
1c. Effects on Age 13 Victimization			
Age 11 Victimization	0.211**	0.205**	0.166**
1d. Effects on Age 11 Victimization			
Internalizing problems	0.053	0.099	0.024
Externalizing behavior	0.213**	0.234**	0.185*
Prosocial behavior	0.145**	0.231**	0.022

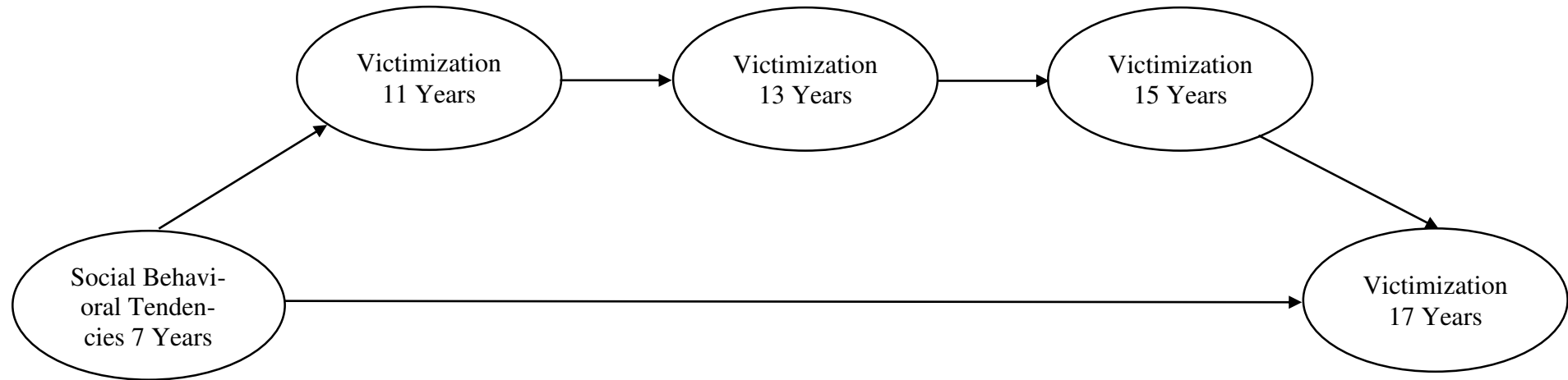


Negative peer relations	0.112*	0.162*	0.048
Competent problem solving	0.003	-0.058	0.118
Dominance	-0.032	-0.047	-0.013
Sensation seeking	0.139	0.060	0.198
Sex (female)	-0.256**		
Swiss	0.007	0.130	-0.117
SES	0.003	0.006*	-0.001
<b>2. Indirect effects</b>			
Internalizing problems->Age 11 Vict -> Age 13 Vict->Age 15 Vict->Age 17 Vict	0.001	0.002	0.001
Externalizing->Age 11 Vict -> Age 13 Vict->Age 15 Vict->Age 17 Vict	0.006**	0.004†	0.006*
Prosocial behavior->Age 11 Vict -> Age 13 Vict->Age 15 Vict->Age 17 Vict	0.004*	0.004*	0.001
Negative peer relations->Age 11 Vict -> Age 13 Vict->Age 15 Vict->Age 17 Vict	0.003†	0.003†	0.002
Social problem solving->Age 11 Vict -> Age 13 Vict->Age 15 Vict->Age 17 Vict	0.000	-0.001	0.004
Dominance->Age 11 Vict -> Age 13 Vict->Age 15 Vict->Age 17 Vict	-0.001	-0.001	0.000
Sensation seeking->Age 11 Vict -> Age 13 Vict->Age 15 Vict->Age 17 Vict	0.004	0.001	0.006

NOTE: Vict = Victimization. STD = Standardized coefficient.

†  $p < .10$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$

Figure 1. Pathways between early social behavioral tendencies and victimization at age 17 through prior victimization.



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