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Non-consensual dissemination of sexual images: The victim-offender overlap

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ABSTRACT

Digital technology provides young people with many new opportunities. However, these opportunities concurred with the development of new offences. A well-studied offence is non-consensual dissemination of sexual images (NCDSI), which can be described as the distribution of explicit photos and videos without the awareness and/or permission of the person pictured. According to previous research, adolescents and emerging adults are most often victims and perpetrators of this behaviour. Furthermore, several studies have observed that there is a relation between victimisation and perpetration of NCDSI. Our study aims to further explore this relation. Using data from the Youth monitor 2018, a survey conducted by the Youth Research Platform in Flanders, the present study researched whether there was a victim-offender overlap within NCDSI. Moreover, the relation between NCDSI and victimisation and perpetration of other offences was studied. Both bivariate and logistic regression analyses were conducted. Our results show that there is a victim-offender overlap within NCDSI as well as an association between NCDSI and victimisation and perpetration of other offences. Theoretical insights for these findings are presented. In addition, the notions 'victim' and 'offender' are discussed as the overlap questions their suitability.

1. Introduction

Over the past decade, digital media have become increasingly important in young people's lives (Subrahmanyam & Greenfield, 2018). Buren and Lunde (2018) state that internet and smartphone use are an intrinsic part of teens' day-to-day activities. On average, they spend more than 7 hours a day on their screen(s) with 70 minutes spent on social media (Boer et al., 2021). These social media applications are used for various reasons. One main reason is the communication with others (Buren & Lunde, 2018). For example, social media applications can be used to reinforce existing relationships with family, peers and romantic partners, but also to meet new people (Subrahmanyam & Greenfield, 2018). Social life, therefore, is increasingly taking place online (Boer et al., 2021). According to Reid et al. (2016), this offers both opportunities and risks regarding the developmental tasks of young people. Two important developmental tasks include: establishing romantic relationships and exploring one's sexuality (Subrahmanyam & Greenfield, 2018; Van Ouytsel et al., 2014). While young people's digital media use offers them new opportunities in the context of these developmental tasks, it also entails a level of risk.

1.1. Sexting & NCDSI

Digital media provide individuals new ways to express romantic feelings and experience intimacy (Buren & Lunde, 2018; Walrave et al., 2018). Hasinhof (2015) points out that for many couples communicating via smartphones and social media constitutes a key part of their relationship. In addition, the sharing of intimate images accounts also for common practice in some relationships. This practice is referred to as 'sexting' and can be defined more broadly as the sending and/or receiving of self-made explicit photos or videos through mobile phone, e-mail and social media applications (e.g. Morelli et al., 2016; Reid et al., 2016; Van Ouytsel et al., 2014; Walrave et al., 2018). According to several authors, for young people, this would be a pleasurable way to express interest and affection towards one another (Buren & Lunde, 2018; Dekker et al., 2019; Hasinhof, 2015), both in romantic relationships as in other kinds of relationships (e.g. casual sexual partners, friends) (Branch et al., 2017). Considering the aforementioned developmental tasks young people face and the ease with which (explicit) photos and videos are shared these days (Hasinhof, 2015; Walrave et al., 2018), sexting is seen as a normal form of intimate communication

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(Döring, 2014; Walker & Sleath, 2017).

Besides these opportunities, as stated earlier, digitalisation also induces specific risks: just as it is now very easy to send explicit images to someone, it is also very easy to further distribute such images to a wider audience (Dekker et al., 2019; Döring, 2014; Hasinhof, 2015; Walrave et al., 2018; Walrave & van de Heyning, 2022). This phenomenon is called 'non-consensual dissemination of sexual images' (NCDSI)[1] and can be described more accurately as the distribution of explicit photos and videos without the awareness and/or permission of the person pictured (e.g. O'Connor et al., 2018; Ruvalcaba & Eaton, 2019; Walker & Sleath, 2017; Walrave & van de Heyning, 2022). It is thus clear that consent is lacking for the distribution of the explicit photos or videos, but initially these images can be obtained either with consent (e.g. consensual sexting) or without consent (e.g. hacking of the victim's smartphone) (Morelli et al., 2016). Several authors, however, presume that in most cases NCDSI is a consequence of previous sexting (Dekker et al., 2019; Döring, 2014; Van den Eynde, 2020).

According to Walker and Sleath (2017), it is difficult to accurately determine the prevalence rates of NCDSI as there is no consistency in research, i.e. in relation to the populations examined and the measurement instruments or questions used. In addition, Henry et al. (2019) state that prevalence rates for victimisation may be an underestimate since many victims are unaware that their images have been shared. Furthermore, victims who are aware of their images being shared are likely to underreport because of feelings of shame (Van den Eynde, 2020). The following numbers should therefore be interpreted with caution. Based on different empirical studies (Branch et al., 2017; Eaton et al., 2017; Henry et al., 2019; Patel & Roesch, 2020; Ruvalcaba & Eaton, 2019; Walker et al., 2019), it is estimated that approximately one in ten persons is victimised by NCDSI at some point in their lives. In contrast, offence rates vary more: some studies find that 15.0% of persons commit NCDSI at some point in their lives (Karasavva & Forth, 2021; Mori et al., 2020; Walker et al., 2019), while others identify that only 5.0% of persons do (Eaton et al., 2017; Ruvalcaba & Eaton, 2019).

Regarding sociodemographic characteristics associated with NCDSI, the prevalence rates for victimisation are lower in adult samples compared to youth samples (Lenhart et al., 2016; Walker & Sleath, 2017). According to Walker and Sleath (2017) and Eaton et al. (2017), this is the same for offenders. So, adolescents and emerging adults are more likely to be victims and offenders of NCDSI than individuals from other age cohorts. This is probably due to their frequent smartphone and social media use in combination with the developmental tasks they face, and the differences here with previous generations (O'Connor et al., 2018; Ruvalcaba & Eaton, 2019; Walker & Sleath, 2017). With respect to sex, there is less consensus: most authors believe that women are more often victims of NCDSI (Branch et al., 2017; Karasavva & Forth, 2021) and men are more often perpetrators (Eaton et al., 2017; O'Connor et al., 2018; Ruvalcaba & Eaton, 2019), but not all authors come to this same conclusion (e.g. Walker & Sleath, 2017). Furthermore, less is known about the connection between NCDSI and educational level. Lenhart et al. (2016) found that, out of the 12.0% of victims in their study, 5.0% did not (yet) have a high school degree, 2.0% were high school graduates, 4.0% were college students, and 1.0% were college graduates. According to Branch et al. (2017), most victims of NCDSI are college undergraduates. This last study also identified that students who committed NCDSI were more likely to have their own intimate image(s) shared as well. The next section discusses this victim-offender overlap in more detail.

1.2. NCDSI and the victim-offender overlap

The study by Branch et al. (2017) is not the only one to identify that individuals who committed NCDSI are more likely to become a victim of this behaviour themselves. In fact, Walker et al. (2019) and Clancy et al. (2020, 2021) also found that individuals who perpetrated NCDSI are at higher risk of experiencing this kind of victimisation in the future. The study results by Boer et al. (2021) and Karasavva and Forth (2021) partly corroborate with these findings. Similarly, they identified that perpetration of NCDSI is predictive of NCDSI victimisation, but they also found that victimisation of NCDSI is predictive of NCDSI perpetration. Moreover, Boer et al. (2021) identified that victimisation of NCDSI is, compared to other predictors, most strongly associated with committing this behaviour in the near future. Furthermore, the study of Karasavva and Forth (2021) also established that nearly 8.0% of their participants are both a victim and an offender of NCDSI. More specifically, 28.0% of NCDSI victims had a history of perpetration of the behaviour and 57.0% of NCDSI perpetrators had a history of this kind of victimisation.

In addition, there is not only an association between committing and experiencing NCDSI, but also between NCDSI and victimisation and perpetration of other offences. Walrave and van de Heyning (2022) argue that NCDSI is not an isolated act, but that this is integrated into a broader pattern of online and offline aggression between peers or romantic partners. For example, Morelli et al. (2016) found that perpetration of NCDSI is significantly related to perpetration of dating violence. Persons who commit NCDSI are thus more likely to be a perpetrator of dating violence as well.

Some authors offer explanations for the associations discussed above. Walker et al. (2019) conceptualise these phenomena within the framework of Intimate Partner Violence and Abuse (IPVA), which entails that reciprocal use of dating violence is common in relationships, with both partners engaging in violent behaviours albeit for different reasons (e.g. jealousy, retaliation). They suggest it is possible to find a similar reciprocity in NCDSI. However, NCDSI does not only occur in romantic or intimate contexts and, therefore, this explanation cannot be applied to all cases of victim-offender overlap regarding NCDSI. Other explanations are proposed by Boer et al. (2021). First, they believe that the victim-offender overlap within NCDSI can be explained by the general strain theory, which states that "negative treatment by others generates negative emotions which in turn can instigate negative actions" (p. 8). In other words, victims of NCDSI can feel frustrated and, in order to cope with these negative feelings, they may commit this or other offences themselves. Secondly, they believe that the overlap could suggest that public dissemination of personal explicit images among young people is normalised. Clancy et al. (2021) also argue that dissemination behaviours are associated with normalization and acceptance of NCDSI more broadly, for example within peer groups. From this, it could be inferred that peer groups accept NCDSI as normative behaviour with as a result that experiencing this behaviours can reinforce such norms. A third explanation proposed by Boer et al. (2021) is that NCDSI can be used as an act of retribution. For example, if sexual images are exchanged between two persons (i.e. sexting) and one person betrays the other one's trust by disseminating this content, the latter might retaliate (Boer et al., 2021).

No other explanations for the victim-offender overlap within NCDSI were found in the literature so far, which may be due to the general lack of empirical research on this specific overlap. However, the literature on cybercrime and cyberbullying might provide valuable insights as well, and this for two reasons. First, some parallels can be drawn between these two behaviours and NCDSI (e.g. they all occur in the online environment) and secondly, the victim-offender overlap has already been studied in more depth here. Therefore, the following sections focus more widely on the overlap between victimisation and perpetration within cybercrime and cyberbullying, and on the associations between these behaviours and victimisation and perpetration of traditional crime and bullying.

According to Kranenberg et al. (2019), Kerstens and Jansen (2016), Mishna et al. (2012), and Chan and Wong (2020) there is a considerable victim-offender overlap for cybercrime and cyberbullying. The study of Jose et al. (2012) specifically found that students who engage in

[1] Non-consensual dissemination of sexual images is abbreviated in this contribution as 'NCDSI'.

cyberbullying are at risk of later becoming victims of cyberbullying themselves. Chan and Wong's research (2020) research on cyberbullying among adolescents in Hong Kong confirms this finding. In addition, they also found that victims of cyberbullying have a higher risk of exhibiting this behaviour later. Furthermore, Wright and Li (2012) identified in their study that victimisation in the cyber context is related to future perpetration of cyber aggression.

In addition, there is also an association between victimisation and perpetration of cybercrime and cyberbullying, and victimisation and perpetration of traditional crimes and bullying. For example, Wright and Li (2012) found that face-to-face victimisation is related to committing cyber aggression six months later. Furthermore, the study of Jose et al. (2012) revealed a positive relationship between cyber victimisation and offline victimisation. They concluded that "one kind of victimisation puts students at risk for other types of victimisation" (p. 308). Furthermore, they found a positive bidirectional relationship between cyberbullying and traditional bulling over time. This implies that students involved in cyberbullying are also likely to be involved in traditional bullying and vice versa. The study results of Mishna et al. (2012) confirm this: students involved in cyberbullying are significantly more involved in offline school aggression compared to students who are not involved in cyberbullying. Different authors suggest different explanations for these associations, which will be discussed in more detail below.

A first explanation for the victim-offender overlap within cybercrime and cyberbullying may be attributed to the characteristics of the digital context itself (Kranenberg et al., 2019; Mishna et al., 2012). According to Mishna et al. (2012), unique characteristics of the cybersphere make it 'easier' to act both as a victim and an offender (sometimes also labeled as 'victim-offender'), for example: the lack of face-to-face interaction and not (always) seeing the impact of your act on others (e.g. the damage caused). Such characteristics of the cybersphere (i.e. high sense of (perceived) anonymity, lower level of social control) may influence individuals' behaviour in a way that they experience fewer inhibitions than in an offline context (Kerstens & Jansen, 2016; Kintz, 2015). Suler (2004) describes this as the "online disinhibition effect". In short, people say and do things online that they would not normally say or do in the offline world. They feel more uninhibited which could lead to cybercrime and cyberbullying (Kintz, 2015; Suler, 2004). The study of Kerstens and Jansen (2016) about the victim-offender overlap in financial cybercrime corroborates this assumption. They found that high online disinhibition is positively and significantly associated with victimisation, perpetration and therefore also the overlap between both.

A second explanation is related to retaliation. Jose et al. (2012) suggest that students who cyberbully provoke retaliation and become victims in turn. The study of Kerstens and Jansen (2016) confirms this hypothesis: offenders who are themselves victims of cybercrime mention retaliation often as a motive for perpetration. They are especially motivated to get back at the perpetrator of their own victimisation. However, the study by Wright and Li (2012) indicates that victims may also act aggressively towards innocent individuals in the cybersphere because they are unwilling (e.g. fear) or unable (e.g. anonymity of the perpetrator) to get back at their own perpetrator.

This aggressive behaviour can also be framed within the general strain theory, which provides a third explanation for the overlap. This theory was also mentioned earlier as a possible explanation for the victim-offender overlap within NCDSI. In this case, the theory states that cyber victimisation may impose strain in an individual's life which generates negative emotions and maladaptive coping strategies such as (cyber) delinquency. The strain caused by cyber victimisation can result in victims becoming offenders themselves, both against their own perpetrator as against innocent individuals, and thus they can be described as victim-offenders (Wright & Li, 2012).

A different approach to explain the victim-offender overlap is described as the "principle of homogamy" (Hindelang et al., 1978; as in Cops & Pleysier, 2014). This principle suggests that the link between victimisation and perpetration is the result of shared lifestyle characteristics and routine activities (Cops & Pleysier, 2014). Lifestyle and routine activities patterns offer an increased likelihood of both experiencing victimisation and committing a crime (Jennings et al., 2012; Verdonck et al., 2011), as potential victims and offenders are in this way likely to come into contact with one another (Cops & Pleysier, 2014). Regarding the victim-offender overlap within cybercrime, Kranenberg et al. (2019) propose that online routine activities can facilitate a digital congregation of potential victims and offenders and may therefore be associated with this overlap. Online routine activities such as social media use and amount of time spent online could thus offer risks for both cybercrime victimisation and offending.

Another shared risk factor, according to Kranenberg et al. (2019), is low self-control. Their study shows that low self-control is an important predictor of being a cybercrime victim-offender. Nodeland's (2020) research results also provide support for the impact of low self-control on the cyber victim-offender overlap. More specifically, low self-control was found to have a significant relationship with cyber victim-offending but also with cyber offending in general. In addition, the study by Kerstens and Jansen (2016) found that low self-control is positively and significantly associated with victimisation and perpetration of financial cybercrime: victims, offenders and victim-offenders are more likely to have a lower level of self-control.

In summary, the advance of digital technology leads to both opportunities and risks for young people. One of these risks that has received increasing attention in recent years is NCDSI. Both prevalence rates and characteristics associated with this phenomenon have been widely studied. However, the results of some of these recent studies also point to something new. First of all, they indicate a victim-offender overlap within NCDSI, and secondly, they suggest an association between NCDSI and victimisation and perpetration of other offences. Since these associations have not yet been explored, this constitutes an interesting and relatively new research area. In exploring this research area, inspiration can be drawn from previous NCDSI literature as well as from cybercrime and -bullying literature specifically focusing on the victim-offender and victim-bully overlap. In addition, studying this new research area is also interesting in terms of content. Knowledge about these associations can provide important information with regard to the (societal, criminal) reaction to NCDSI, and provide tools for new, possibly more effective ways of responding to victims and perpetrators of the behaviour.

1.3. Current study

The current study investigates the victim-offender overlap within NCDSI and the association between victimisation and perpetration of NCDSI and other offences. With this, the study answers a gap in the research literature regarding NCDSI. First of all, with regard to the victim-offender overlap within NCDSI, only a few studies have identified that perpetration of NCDSI is associated with a higher likelihood of future victimisation of this behaviour (i.e. Branch et al., 2017; Clancy et al., 2020, 2021; Walker et al., 2019). In addition, to date, only two studies have found that victimisation of NCDSI is also associated with a higher likelihood of future perpetration of NCDSI (i.e. Boer et al., 2021; Karasavva & Forth, 2021). Moreover, in none of these studies, examining the victim-offender overlap within NCDSI constituted the sole or main purpose of the research. In other words, there is a dearth of empirical research specifically focusing on the victim-offender overlap within NCDSI, whilst better knowledge about this overlap and NCDSI victim-offenders in particular can be very important for preventive and punitive measures regarding this behaviour. Therefore, the current study aims to explore in detail the victim-offender overlap within NCDSI. For this first purpose, the following hypothesis and sub-hypotheses are developed:

H1. There is a victim-offender overlap within NCDSI

H1a. There is a relation between victimisation of NCDSI and perpetration of NCDSI

H1b. Perpetration of NCDSI is associated with victimisation of NCDSI

H1c. Victimisation of NCDSI is associated with perpetration of NCDSI

Secondly, with regard to the association between NCDSI and victimisation and perpetration of other offences, only an association between committing NCDSI and committing dating violence is established (Morelli et al., 2016). However, NCDSI research shows that this behaviour does not only occur in the context of romantic relationships (e.g. Branch et al., 2017). Therefore, it is also interesting to examine the associations of NCDSI with other types of offences, as has already been explored in the cybercrime and -bullying literature. More specifically, this research shows an association between these two behaviours, and victimisation and perpetration of different traditional crimes and bullying (Jose et al., 2012; Mishna et al., 2012; Wright & Li, 2012). To date, no empirical research has been conducted to identify potentially similar associations between victimisation and perpetration of NCDSI, and victimisation and perpetration of other, more traditional offences. The current study is the first to attempt to fill this gap. A better knowledge about the linkage between NCDSI and traditional victimisation and perpetration can also be important in terms of preventive and punitive measures, hence our second purpose is to research these associations. The following hypothesis and subhypotheses are therefore developed:

H2. There is an association between victimisation and perpetration of NCDSI, and victimisation and perpetration of other offences

H2a. There is a relation between victimisation of NCDSI and victimisation of other offences

H2b. There is a relation between perpetration of NCDSI and perpetration of other offences

H2c. Victimisation of other offences is associated with victimisation of NCDSI

H2d. Perpetration of other offences is associated with perpetration of NCDSI

2. Methods

2.1. Study design

In order to test the abovementioned hypotheses, data from the School Monitor 2018 are used. This survey research was conducted by the Youth Research Platform in Flanders which is an interdisciplinary and inter-university cooperation between the Department of Social Work and Social Pedagogy (University of Ghent), the Department of Sociology (University of Brussels) and the Leuven Institute of Criminology (KU Leuven), funded by the Flemish government, in order to stimulate systematical and interdisciplinary attention for youth research. One of their main tasks is monitoring the social life of Flemish youth. Therefore, standardised surveys are developed and administered with a representative sample of Flemish young people on a recurrent basis (Youth Research Platform, 2022). This study specifically uses the data of the 2018 school surveys.

2.2. Procedure

The school surveys were administered in 2018 in the major cities of Antwerp, Ghent and Brussels, and in Flemish non-major city secondary schools. In schools that agreed to participate, at random samples of classes were selected, taking into account the grade[2] and type of education. For the cities of Antwerp, Ghent and Brussels, the response rates amounted respectively 47.5%, 41.0% and 58.0% at school level, and 85.3%, 82.2% and 83.5% at student level. Non-response at student level is due to (1) refusals by parents and/or students, (2) absences of students, and (3) technical problems (with using tablets for surveying). For the Flemish sample, the response rates were 56.4% at school level and 89.6% at student level. This means that in total 80 secondary schools (Antwerp: $n = 27$, Ghent: $n = 14$, Brussels: $n = 18$, Flanders: $n = 21$) and 8,439 students (major city school sample: $n = 6{,}039$; Flemish sample: $n = 2{,}400$) participated in the study. The surveys were administered between the 1st of February 2018 and the 31st of May 2018 (Spruyt et al., 2019).

2.3. Participants

As mentioned above, a total of 8,439 students participated in the study. Of these students, 2,581 (33.8%) were in the first grade and completed the survey for first grade students and 5,858 (66.2%) were in the second and third grade and completed this corresponding survey. In the first grade sample ($N = 2{,}581$), students had a mean age of 13.18 ($SD = 0.95$, 50.7% females). Regarding the educational level, most students followed a theoretical training (A-level: ASO and TSO) (75.8%) and a minority followed a vocational training (B-level: BSO) (25.2%). In the second and third grade sample ($N = 5{,}858$), students had a mean age of 16.28 ($SD = 1.53$, 53.9% females). The majority of these students were again enrolled in a general A-level education (ASO: 39.3%, TSO: 31.2%, total: 70,5%), 24.4% were in B-level vocational education (BSO) and 5.1% followed an artistic training (KSO).

2.4. Measurement instruments

2.4.1. Sociodemographic data

Participants were asked about different sociodemographics such as age, sex and educational level. Age is integrated as a metric variable. Sex is a dichotomous variable with males (re)coded as 0 and females as 1. A third sociodemographic variable that will be used here is educational level, which is a nominal variable. Participants in the first grade enrolled in A-level education (ASO and TSO) are (re)coded as 0 and B-level education (BSO) is (re)coded as 1. Participants in the second and third grade are also (re)coded in two categories, i.e. ASO, TSO and KSO (code 0) and BSO (code 1).

2.4.2. NCDSI

Victimisation and perpetration of NCDSI were surveyed in the same way for first grade students as for second and third grade students. Victimisation of NCDSI was questioned as follows: “Over the past 12 months, were there ever sexually explicit photos or videos of you disseminated online (without your consent)?“. In case of perpetration, the question was worded: “Over the past 12 months, have you ever disseminated sexually explicit photos or videos of someone else via the Internet or your phone (without that person’s consent)?“. For both questions there were four response options: no/never (code 0), 1 time (code 1), 2 times (code 2), 3 times (code 3), and more than 3 times (code 4). In our analysis, these variables are recoded into dummy variables for both samples, leaving the response option no/never coded as 0, and combining the response options 1 time, 2 times, 3 times and more than 3 times coded as 1. Thus, the dummy variable for victimisation and perpetration of NCDSI is coded, respectively 0 for ‘no victim of NCDSI’ and ‘no perpetrator of NCDSI’, and 1 for ‘victim of NCDSI’ and ‘perpetrator of NCDSI’.

2.4.3. Other offences

In addition to victimisation and perpetration of NCDSI, the School Monitor also questioned students about victimisation and perpetration of other offences and deviant behaviours over the past 12 months (e.g. (cyber)bullying, theft and assault). For this study some of these variables

[2] The Belgian secondary school system is divided into three different grades based on age and type of training. In terms of age, first grade students are usually 12 to 14 years old, second grade students 14 to 16, and third grade students 16 to 18.

Table 1
Descriptive statistics.

	First grade sample $N = 2,581$		Second and third grade sample $N = 5,858$	
Victimisation of NCDSI	96	$n = 2,389$	189	$n = 5,709$
	4%		3.3%	
Perpetration of NCDSI	130	$n = 2,412$	439	$n = 5,602$
	5.4%		7.8%	
Victimisation of other offences	1215	$n = 2,240$	2,863	$n = 5,493$
	54.2%		52.1%	
Perpetration of other offences	800	$n = 2,737$	1,627	$n = 5,557$
	33.7%		29.3%	

Table 2
Cross tabulation Victimisation of NCDSI – Perpetration of NCDSI.

		No perp. of NCDSI	Perp. of NCDSI	Total
First grade sample				
No victim of NCDSI	Count	2,159	81	2,240
	% within Victim of NCDSI	96.4%	3.6%	100.0%
Victim of NCDSI	Count	57	37	94
	% within Victim of NCDSI	60.6%	39.4% ***	100.0%
Total	Count	2,216	118	2,334
	% within Victim of NCDSI	94.9%	5.1%	100.0%
Second and third grade sample				
No victim of NCDSI	Count	4,995	363	5,358
	% within Victim of NCDSI	93.2%	6.8%	100.0%
Victim of NCDSI	Count	112	62	174
	% within Victim of NCDSI	64.4%	35.6% ***	100.0%
Total	Count	5,107	425	5,532
	% within Victim of NCDSI	92.3%	7.7%	100.0%

***$p < 0.001$.

are combined into the new dummy variable 'victimisation of other offences' or 'perpetration of other offences'. For both samples, experiencing at least one of the following behaviours in the past 12 months is classified as being a victim of other offences (code 1): forced to hand over something, theft, physical violence with injuries, harassment, or threat in public or online. Not experiencing one of these behaviours in the past 12 months is classified as not being a victim of other offences (code 0). Furthermore, perpetration of other offences is understood as having committed at least one of the following behaviours in the past 12 months (code 1): carrying a weapon, theft from a person, physical violence with injuries, harassment, or threat in public or online. Likewise, not having committed one of these behaviours in the past 12 months is classified as not being a perpetrator of other offences (code 0).

2.5. Data analyses

First, descriptive statistical analyses (frequencies and percentages) are used to describe the prevalence rates of victimisation and perpetration of NCDSI and other offences in both samples. Secondly, bivariate analyses are conducted to examine the relationship/overlap between (1) victimisation of NCDSI and perpetration of NCDSI (H1a), (2) victimisation of NCDSI and victimisation of other offences (H2a), and (3) perpetration of NCDSI and perpetration of other offences (H2b). In total, six cross tabulations are obtained (the three aforementioned (possible) relationships for both samples (first grade, and second and third grade)) with the associated Chi-square values, which indicate if there is a significant relationship between the variables. Thirdly, logistic regression analyses are conducted to understand the impact of criminality variables (i.e. victimisation or perpetration of NCDSI (H1b & H1c), victimisation and perpetration of other offences (H2c & H2d)) and sociodemographic variables (i.e. age, sex and educational level) on victimisation and perpetration of NCDSI. Logistic regression analyses are conducted for both samples with respectively 'victimisation of NCDSI' and 'perpetration of NCDSI' as the dependent variable, which makes a total of four logistic regression analyses.[3] Each of these analyses includes two models. The first model includes the criminality variables and, in the second model the sociodemographic variables are added. This allows us to first determine the direct influence of the criminality variables on the dependent variable, and then to control these effects for the sociodemographic variables in the model. In this way, we can examine whether the possible influences of the criminality variables still exist or, on the contrary, disappear. The following section provides an overview of the results of these analyses.

3. Results

3.1. Descriptive statistics

Table 1 presents the descriptive statistics for this study. For the first grade sample ($N = 2,581$; $M_{age} = 13.18$, $SD = 0.95$; 50.7% females; 25.2% B-level education), 96 persons were victims (4.0%) and 130 persons (5.4%) were perpetrators of NCDSI. For the second and third grade sample ($N = 5,858$; $M_{age} = 16.28$, $SD = 1.53$; 53.9% females; 24.4% B-level education), 189 persons were victims (3.3%) and 439 persons were perpetrators (7.8%) of NCDSI. Furthermore, for both samples, more than half of the persons were victims and approximately one third were perpetrators of other offences. The smaller sizes of these subsamples, due to item non-response, should be taken into account when reading and interpreting the results of the cross tabulations and logistic regression analyses in the following sections.

[3] The assumptions for running these logistic regression analyses were fulfilled.

3.2. Cross tabulations

3.2.1. Relation between victimisation of NCDSI and perpetration of NCDSI (H1a)

The overlap between victimisation of NCDSI and perpetration of NCDSI is reported in Table 2. The absolute numbers show that, for the first grade sample and for the second and third grade sample respectively, 37 and 62 persons were a victim and a perpetrator of NCDSI. For the first grade sample, this means that 39.4% of all victims of NCDSI were also perpetrators of this behaviour. The Chi-square test shows that there is a significant relation between these two variables ($n = 2{,}334$, $\chi^2 = 240.14$, $df = 1$, $p < 0.001$). For the second and third grade sample, this means that 35.6% of all victims also committed NCDSI, which is a significant overlap as well ($n = 5{,}532$, $\chi^2 = 197.87$, $df = 1$, $p < 0.001$).

3.2.2. Relation between victimisation of NCDSI and victimisation of other offences (H2a)

The overlap between victimisation of NCDSI and victimisation of other offences is reported in Table 3.

The absolute number show that, for the first grade sample and for the second and third grade sample respectively, 77 and 150 persons were a victim of NCDSI and a victim of other offences. For the first grade sample, this means that 91.7% of all victims of NCDSI were also victims of at least one other offence. The Chi-square test shows that there is a significant relation between these two variables ($n = 2{,}232$, $\chi^2 = 49.44$, $df = 1$, $p < 0.001$). For the second and third grade sample, this means that 86.7% of victims of NCDSI were also victims of another offence, which is a significant overlap as well ($n = 5{,}454$, $\chi^2 = 85.87$, $df = 1$, $p < 0.001$).

3.2.3. Relation between perpetration of NCDSI and perpetration of other offences (H2b)

The overlap between perpetration of NCDSI and perpetration of other offences is reported in Table 4. The absolute numbers show that, for the first grade sample and for the second and third grade sample respectively, 100 and 288 persons were a perpetrator of NCDSI and a perpetrator of other offences. For the first grade sample, this means that 85.5% of all perpetrators of NCDSI also committed at least one other offence. The Chi-square test shows that there is a significant relation between these two variables ($n = 2{,}362$, $\chi^2 = 149.00$, $df = 1$, $p < 0.001$). For the second and third grade sample, this means that 62.2% of perpetrators of NCDSI were also perpetrators of another offence, which is a significant overlap as well ($n = 5{,}541$, $\chi^2 = 336.00$, $df = 1$, $p < 0.001$).

3.3. Logistic regression analyses

3.3.1. Dependent variable: victimisation of NCDSI (H1b & H2c)

Table 5 presents the logistic regression models for the first grade sample. We used listwise deletion to manage missing data, which resulted in a loss of 20.3% of participants ($n = 2{,}056$). The logistic regression models show the likelihood of becoming a victim of NCDSI. The Omnibus Test of Model Coefficients indicates that each model has a

Table 3
Cross tabulation Victimisation of NCDSI – Victimisation of other offences.

		No victim of other offences	Victim of other offences	Total
First grade sample				
No victim of NCDSI	Count	1,016	1,132	2,148
	% within Victim of NCDSI	47.3%	52.7%	100.0%
Victim of NCDSI	Count	7	77	84
	% within Victim of NCDSI	8.3%	91.7% ***	100.0%
Total	Count	1,023	1,209	2,232
	% within Victim of NCDSI	45.8%	54.2%	100.0%
Second and third grade sample				
No victim of NCDSI	Count	2,591	2,690	5,281
	% within Victim of NCDSI	49.1%	50.9%	100.0%
Victim of NCDSI	Count	23	150	173
	% within Victim of NCDSI	13.3%	86.7% ***	100.0%
Total	Count	2,614	2,840	5,454
	% within Victim of NCDSI	47.9%	52.1%	100.0%

***$p < 0.001$.

Table 4
Cross tabulation Perpetration of NCDSI – Perpetration of other offences.

		No perp. of other offences	Perp. of other offences	Total
First grade sample				
No perp. of NCDSI	Count	1,553	692	2,245
	% within Perp. of NCDSI	69.2%	30.8%	100.0%
Perp. of NCDSI	Count	17	100	117
	% within Perp. of NCDSI	14.5%	85.5% ***	100.0%
Total	Count	1,570	792	2,362
	% within Perp. of NCDSI	66.5%	33.5%	100.0%
Second and third grade sample				
No perp. of NCDSI	Count	3,787	1,332	5,119
	% within Perp. of NCDSI	74.0%	26.0%	100.0%
Perp. of NCDSI	Count	134	288	422
	% within Perp. of NCDSI	31.8%	62.2% ***	100.0%
Total	Count	3,921	1,620	5,541
	% within Perp. of NCDSI	70.8%	29.2%	100.0%

***$p < 0.001$.

Table 5
Logistic regression predicting victimisation of NCDSI (first grade sample, n = 2,056).

	Model 1			Model 2		
	Parameter	Exp(B)	Sig.	Parameter	Exp(B)	Sig.
Criminality variables						
Victimisation of other offences *(Ref. = no victim of other offences)*	1.864	6.452	***	1.868	6.473	***
Perpetration of NCDSI *(Ref. = no perpetrator of NCDSI)*	2.236	9.353	***	2.044	7.724	***
Perpetration of other offences *(Ref. = no perpetrator of other offences)*	1.022	2.779	***	0.912	2.489	**
Sociodemographic variables						
Sex *(Ref. = male)*				-0.447	0.640	
Age				0.071	1.073	
Educational level *(Ref. = A-level)*				0.554	1.740	*
Nagelkerke R^2	0.240			0.252		

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

satisfactory fit (Model 1: $\chi^2 = 135.732$, $df = 3$, $p < 0.001$, Model 2: $\chi^2 = 142.951$, $df = 6$, $p < 0.001$). The Nagelkerke R^2, as pseudo-measure of explained variance and indication of the predictive power of the model, amounts 0.240 or 24.0% for Model 1 and 0.252 or 25.2% for Model 2.

The analysis shows that criminality variables in general were more strongly associated with victimisation of NCDSI than sociodemographic variables, with perpetration of NCDSI as the strongest associated variable. More specifically, perpetrators of NCDSI were 7.72 times more likely to become a victim of this behaviour compared to non-perpetrators of NCDSI (Exp (B) = 7.724, $p < 0.001$) (H1b). Perpetrators of other offences also had a higher likelihood of victimisation of NCDSI than persons who were not a perpetrator of other offences (Exp (B) = 2.489, $p < 0.01$). In addition, victims of other offences were 6.47 times more likely to become a victim of NCDSI as well, than persons who were not a victim of other offences (Exp (B) = 6.473, $p < 0.001$) (H2c). In Model 2, we added the sociodemographic variables sex, age and educational level. Only education level significantly added to the assessment of the dependent variable. Students in B-level education were more likely to become a victim of NCDSI compared to students in A-level education (Exp(B) = 1.740, $p < 0.05$).

Table 6 presents the logistic regression models for the second and third grade sample. We used listwise deletion to manage missing data, which resulted in a loss of 11.8% of participants ($n = 5{,}166$). The logistic regression models show the likelihood of becoming a victim of NCDSI. The Omnibus Test of Model Coefficients indicates that each model has a satisfactory fit (Model 1: $\chi^2 = 149.967$, $df = 3$, $p < 0.001$, Model 2: $\chi^2 = 188.473$, $df = 6$, $p < 0.001$). The Nagelkerke R^2 amounts 0.122 or 12.2% for Model 1 and 0.152 or 15.2% for Model 2.

The analysis again shows that criminality variables in general were more strongly associated with victimisation of NCDSI than sociodemographic variables, with perpetration of NCDSI as the strongest associated variable. Perpetrators of NCDSI were 4.51 times more likely to become a victim of this behaviour compared to non-perpetrators of NCDSI (Exp (B) = 4.509, $p < 0.001$) (H1b). Perpetrators of other offences also had a higher likelihood of victimisation of NCDSI than persons who were not a perpetrator of other offences (Exp (B) = 1.579, $p < 0.05$). In addition, victims of other offences were 4.09 times more likely to become a victim of NCDSI as well, than persons who were not a victim of other offences (Exp (B) = 4.094, $p < 0.001$) (H2c). With regard to the sociodemographic variables, students in a vocational training (BSO) were more likely to become a victim of NCDSI compared to students enrolled in a different educational level (not BSO: ASO, TSO, KSO) (Exp(B) = 2.331, p

Table 6
Logistic regression predicting victimisation of NCDSI (second and third grade sample, n = 5,166).

	Model 1			Model 2		
	Parameter	Exp(B)	Sig.	Parameter	Exp(B)	Sig.
Criminality variables						
Victimisation of other offences *(Ref. = no victim of other offences)*	1.455	4.284	***	1.410	4.094	***
Perpetration of NCDSI *(Ref. = no perpetrator of NCDSI)*	1.527	4.604	***	1.506	4.509	***
Perpetration of other offences *(Ref. = no perpetrator of other offences)*	0.419	1.520	*	0.456	1.579	*
Sociodemographic variables						
Sex *(Ref. = male)*				0.690	1.994	
Age				-0.027	0.973	
Educational level *(Ref. = not BSO)*				0.846	2.331	***
Nagelkerke R^2	0.122			0.152		

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Table 7
Logistic regression predicting perpetration of NCDSI (first grade sample, n = 2,056).

	Model 1			Model 2		
	Parameter	Exp(B)	Sig.	Parameter	Exp(B)	Sig.
Criminality variables						
Perpetration of other offences *(Ref. = no perpetrator of other offences)*	2.165	8.716	***	2.006	7.434	***
Victimisation of NCDSI *(Ref. = no victim of NCDSI)*	2.235	9.349	***	2.087	8.061	***
Victimisation of other offences *(Ref. = no victim of other offences)*	0.269	1.308		0.317	1.373	
Sociodemographic variables						
Sex *(Ref. = male)*				-0.248	0.781	
Age				0.514	1.672	***
Educational level *(Ref. = A-level)*				0.750	2.116	**
Nagelkerke R^2	0.248			0.292		

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Table 8
Logistic regression predicting perpetration of NCDSI (second and third grade sample, n = 5,166).

	Model 1			Model 2		
	Parameter	Exp(B)	Sig.	Parameter	Exp(B)	Sig.
Criminality variables						
Perpetration of other offences *(Ref. = no perpetrator of other offences)*	1.665	5.288	***	1.615	5.026	***
Victimisation of NCDSI *(Ref. = no victim of NCDSI)*	1.523	4.585	***	1.530	4.620	***
Victimisation of other offences *(Ref. = no victim of other offences)*	0.443	1.557	***	0.464	1.591	***
Sociodemographic variables						
Sex *(Ref. = male)*				-0.197	0.821	
Age				-0.076	0.927	*
Educational level *(Ref. = not BSO)*				0.162	1.176	
Nagelkerke R^2	0.159			0.163		

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

< 0.001).

3.3.2. Dependent variable: perpetration of NCDSI (H1c & H2d)

Table 7 presents the logistic regression models for the first grade sample. We used listwise deletion to manage missing data, which resulted in a loss of 20.3% of participants (n = 2,056). The logistic regression models show the likelihood of becoming a perpetrator of NCDSI. The Omnibus Test of Model Coefficients indicates that each model has a satisfactory fit (Model 1: $\chi^2 = 159.203$, $df = 3$, $p < 0.001$, Model 2: $\chi^2 = 188.248$, $df = 6$, $p < 0.001$). The Nagelkerke R^2 amounts 0.248 or 24.8% for Model 1 and 0.292 or 29.2% for Model 2.

The analysis shows that victimisation of NCDSI was the strongest associated variable with future perpetration of this behaviour, with victims of NCDSI being 8.06 times more likely to commit NCDSI compared to persons who were not a victim of NCDSI (Exp (B) = 8.061, $p < 0.001$) (H1c). Perpetrators of other offences also had a higher likelihood to become a perpetrator of NCDSI than persons who were not a perpetrator of other offences (Exp (B) = 7.434, $p < 0.001$) (H2d). With regard to the sociodemographic variables, the likelihood of becoming a perpetrator of NCDSI increased with age. More specifically, for every year a person was older, the likelihood of becoming a perpetrator of NCDSI increased with 67.2% (Exp (B) = 1.672, $p < 0.001$). In addition, students in B-level education were more likely to become a perpetrator of NCDSI compared to students in A-level education (Exp(B) = 2.116, $p < 0.01$).

Table 8 presents the logistic regression models for the second and third grade sample. We used listwise deletion to manage missing data, which resulted in a loss of 11.8% of participants (n = 5,166). The logistic regression models show the likelihood of becoming a perpetrator of NCDSI. The Omnibus Test of Model Coefficients indicates that each model has a satisfactory fit (Model 1: $\chi^2 = 351.201$, $df = 3$, $p < 0.001$, Model 2: $\chi^2 = 358.352$, $df = 6$, $p < 0.001$). The Nagelkerke R^2 amounts 0.159 or 15.9% for Model 1 and 0.163 or 16.3% for Model 2.

The analysis shows that criminality variables in general were more strongly associated with perpetration of NCDSI than sociodemographic variables. More specifically, victims of NCDSI were 4.62 times more likely to become a perpetrator of this behaviour compared to non-victims of NCDSI (Exp (B) = 4.620, $p < 0.001$) (H1c). Victims of other offences also had a higher likelihood of perpetration of NCDSI than persons who were not a victim of other offences (Exp (B) = 1.591), $p <$ 0.001). In addition, perpetrators of other offences were 5.03 times more likely to commit NCDSI as well, than persons who were not a perpetrator of other offences (Exp (B) = 5.026, $p < 0.001$) (H2d). With regard to the sociodemographic variables, the likelihood of becoming a perpetrator of NCDSI decreased with age. For every year a person was older, the likelihood of becoming a perpetrator of NCDSI decreased with 92.7% (Exp (B) = 0.927, $p < 0.05$).

4. Discussion

This study investigated the victim-offender overlap within NCDSI and the association between victimisation and perpetration of NCDSI and victimisation and perpetration of other offences. Our results show that there is a significant overlap between victimisation and perpetration of NCDSI (H1a confirmed), victimisation of NCDSI and victimisation of other offences (H2a confirmed), and perpetration of NCDSI and perpetration of other offences (H2b confirmed), both for the first grade sample and for the second and third grade sample.

Our results also indicate that criminality variables in general were more strongly associated with victimisation of NCDSI than sociodemographic variables. More specifically, perpetrators of NCDSI had the highest likelihood to become a victim of the behaviour themselves (H1b confirmed). This result corroborates with previous research which stipulated that individuals who committed NCDSI are more likely to have their own intimate image(s) shared as well (Boer et al., 2021; Branch et al., 2017; Clancy et al., 2020, 2021; Karasavva & Forth, 2021; Walker et al., 2019). A possible explanation for this finding could be that perpetrators of NCDSI provoke retaliation and are therefore more likely to become victims of this offence in turn (Boer et al., 2021; Jose et al., 2012). In addition, perpetrators of other offences also had a higher likelihood to become a victim of NCDSI than non-perpetrators. Furthermore, victims of other offences were more likely to be victimised by this specific behaviour as well, in comparison with non-victims (H2c confirmed). This leans towards the conclusion of Jose et al. (2012), namely that victimisation of one (type of) offence puts students at risk for victimisation of other (types of) offences – which might also provide a possible explanation for the general overlap between victimisation of NCDSI and victimisation of other offences. Our final result here concerns a socio-demographic variable. We identified that students in a vocational training had a higher risk of becoming a victim of NCDSI compared to students in a different educational level.

In addition, our results show that the strongest associated variables with perpetration of NCDSI were victimisation of this offence and perpetration of other offences (H1c & H2d confirmed). Our study findings are therefore partly in line with Boer et al. (2021) who state that victimisation of NCDSI is the strongest predictor of perpetration of this behaviour in the near future. A first explanation for this association might again relate to retribution. After all, the study of Kerstens and Jansen (2016) concluded that offenders, who are themselves also a victim of cybercrime, often mention retaliation as a motive for perpetration. Moreover, victims tend to be particularly motivated to get back at their own perpetrator (Wright & Li, 2012). Secondly, this association can possibly be explained by the general strain theory. The strain caused to victims of NCDSI could result in negative coping strategies, such as committing this or other offences themselves (Boer et al., 2021; Wright & Li, 2012). Furthermore, perpetration of other offences was also associated with perpetration of NCDSI. This finding confirms Walrave and van de Heyning's (2022) statement that NCDSI is not an isolated act. In fact, our results show that NCDSI is related to a broader pattern of different types of criminal behaviour and not only to committing dating violence, as Morelli and colleagues argued (2016), which (re)affirms that the behaviour also takes place in non-romantic relationships. In

addition, these results might also provide a possible explanation for the general overlap between perpetration of NCDSI and perpetration of other offences. The last finding concerning the criminality variables only applies to the second and third grade sample. Within this group, victims of other offences were more likely to commit NCDSI than persons who were not a victim of other offences. A similar association was identified by Wright and Li (2012), namely that traditional victimisation can lead to cybercrime perpetration in the near future.

As for the sociodemographic variables, our results show that, for the first grade sample, the likelihood of committing NCDSI increased with age. For the second and third grade sample, on the other hand, this likelihood decreased with age. This contradictory finding can probably be attributed to the age differences between these two samples (first grade sample: $M_{age} = 13.18$, $SD = 0.95$; second and third grade sample: $M_{age} = 16.28$, $SD = 1.53$). Our second finding here only applies to the first grade sample. First grade students in B-level education were more likely to become a perpetrator of NCDSI than first grade students in A-level education. Finally, there is an overall finding with regard to sex. Our results indicate that sex was not significantly associated with victimisation of NCDSI nor with perpetration of this offence. This conclusion is in line with previous meta-analysis denying the idea that women are mostly victims and men are most often perpetrators of NCDSI (Walker & Sleath, 2017).

Partly because of the significant victim-offender overlap within NCDSI, and the fact, therefore, that a considerable portion of victims of NCDSI are also offenders of the behaviour and vice versa, we can question the suitability of the notions 'victim' and 'offender'. In addition, there are also other reasons to question their suitability. For example, some 'victims' of NCDSI do not label themselves this way, and some 'offenders' of NCDSI do not perceive themselves as a criminal offender. So the way young people feel about this is not always in line with the criminal qualifications, in short, there is tension between the two. It thus might be appropriate to think about other, better suitable notions. The importance of language in the context of image-based sexual abuse (IBSA) was previously highlighted by DiTullio and Sullivan (2019). They especially stressed the importance of the use of feminist-informed language to empower individuals instead of degrading them, thus opting for the use of 'person who has experienced' or 'survivor' instead of 'victim'. The use of these concepts can help individuals who have experienced IBSA to redefine their sense of self and to create preferred stories that fit their new identity (DiTullio & Sullivan, 2019). Although, in light of the victim-offender overlap it seems more appropriate to apply more neutral notions. A concept already used in the literature is 'victim-offender', however, the application of this concept is questionable. The contradiction in terms might have a negative impact on the labeled individuals. Being labeled as a victim as well as an offender can be confusing for an individual's sense of self. The use of other, more neutral notions is therefore preferable, for example 'the affected'. Future linguistic research can reflect on these notions and also propose other suitable ones.

4.1. Limitations

Our study is one of the first to examine the victim-offender overlap in relation to NCDSI and the association between victimisation and perpetration of NCDSI and other offences in such detail, and therefore has some initial limitations. A first limitation has to do with the proposed explanations for the overlap between victimisation and perpetration of NCDSI, victimisation of NCDSI and victimisation of other offences, and perpetration of NCDSI and perpetration of other offences. All these explanations derive from previous research and therefore their applicability to NCDSI research is largely speculative. In other words, none of these explanations has been examined in our own study. We therefore recommend that other researchers further investigate possible explanations for these relations. Another scholarly recommendation – which does not stem from a limitation of our research but rather constitutes a reflection in response to our findings – is to conduct more linguistic research on appropriate notions in the context of IBSA, and in particular to reflect here on more neutral concepts for the notion 'victim-offender'.

A second limitation relates to our research design. Our study uses data that was originally collected for other research purposes, which also involves some limitations. First of all, our study (focus) depends on the variables and questions used in the original surveys. Different relevant variables in the context of NCDSI, such as sexual orientation and sexting behaviour, were not questioned and were therefore not included in our study. Secondly, we also depend on how the variables were operationalised. For example, even though victimisation of NCDSI was operationalised in a broad way, some NCDSI behaviours were not covered (e.g. persons whose naked image is shown to others are often also considered as victims of NCDSI, but this was not included in the operationalisation). In addition, the operationalisation includes a specific reference period with the result that persons who were victimised more than 12 months ago, were not considered as victims according to this definition. The operationalisation of variables thus has an impact on prevalence rates and consequently also on our study results.

The third limitation relates to the cultural context in which the study was conducted. As discussed earlier, the study was conducted in secondary schools in Flanders, Belgium. Therefore, we cannot simply assume that the study results are generalizable to other European or non-Western countries and cultures. A fourth limitation, also connected to the generalizability of our results, specifically relates to the prevalence rates of victimisation and perpetration in our study. Although we started with two large samples, the sizes of the subsamples, victims and perpetrators of NCDSI in particular, are rather small. As a result, the groups of persons who are (1) a victim and an offender of NCDSI, (2) a victim of NCDSI and a victim of other offences, or (3) a perpetrator of NCDSI and a perpetrator of other offences are likewise small in number. For these reasons, we have to be careful with interpreting and generalizing the study results to the broader (international) population.

A fifth limitation is again associated with our research design and data analyses. Our research design is cross-sectional and therefore excludes any causal inferences from our analyses and findings. A final scholarly recommendation is therefore to conduct longitudinal research on victimisation and perpetration of NCDSI and other offences, and on the relations between these behaviours, in particular. Furthermore, there are some limitations to our logistic regression analyses. First, listwise deletion was used to manage the missing data for the logistic regression analysis, which resulted in a substantial loss of participants. Secondly, the logistic regression models have a low explanatory power, especially the models related to the second and third grade sample. In our study, however, this was not necessarily a problem as we were interested in the first place in the relation between victimisation and perpetration of NCDSI and the association(s) between NCDSI and victimisation and perpetration of other offences. We did not want to assess the outcomes 'victimisation of NCDSI' or 'perpetration of NCDSI' on the basis of these models.

5. Conclusion

Our study aimed to research the victim-offender overlap within NCDSI and the association between victimisation and perpetration of NCDSI and other offences in secondary school students in Flanders. In doing so, we developed two main hypotheses, each containing a number of subhypotheses. Based on our research findings, confirming all first subhypotheses, we can conclude that there is a victim-offender overlap within NCDSI for this group. In other words, a considerable portion of victims of NCDSI are also an offender of the behaviour and vice versa. In addition, our findings indicate that perpetration of NCDSI is associated with a higher likelihood of victimisation of the behaviour, and that victimisation of NCDSI is associated with a higher likelihood of perpetration of the behaviour. Secondly, our research findings confirmed all

second subhypotheses from which we can conclude that there is an association between victimisation and perpetration of NCDSI, and victimisation and perpetration of other offences for this group. This means, respectively, that a considerable portion of victims and perpetrators of NCDSI are also victims and perpetrators of at least one other offence. We also identified that victims and perpetrators of other offences are more likely to be victimised by NCDSI and to commit this behaviour in the future. Furthermore, we can conclude that criminality variables in general are more strongly associated with NCDSI than sociodemographic variables. However, due to the limitations of our study, we have to be careful with generalizing these results to the (international) population.

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Data statement

For this study we used data from the School Monitor 2018, a survey conducted by the Youth Research Platform in Flanders, an interdisciplinary and inter-university cooperation between the Department of Social Work and Social Pedagogy (University of Ghent), the Department of Sociology (University of Brussels) and the Leuven Institute of Criminology (KU Leuven), funded by the Flemish government.

CRediT authorship contribution statement

Silke Van den Eynde: Conceptualization, Methodology, Formal analysis, Visualization, Writing – original draft. **Stefaan Pleysier:** Methodology, Validation, Resources, Writing – review & editing. **Michel Walrave:** Validation, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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