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Risk-Seeking, Risky Lifestyles and Cyberstalking – What Factors Promote Cyberstalking Victimization Among Adolescents? An Empirical Test of the Self-Control/Risky Lifestyle Mediation Hypothesis

The aim of this paper is to apply the self-control/risky lifestyle theory to the risk of cyberstalking victimization among a younger age group by using a representative student sample from Germany. Results show that cyberstalking victimization is experienced by 18.2% of the representative sample of ninth graders. Girls were more often victimized than boys. Only a minority solely experience cyberstalking whereas considerably more juveniles report having experienced both offline stalking and cyberstalking. The findings from the parallel multiple mediation models support the self-control/lifestyle theory and are consistent with a growing body of literature indicating that low self-control has a direct and indirect effect on the risk of experiencing cyberstalking. For both genders, risk seeking is significantly and positively associated with the risk of experiencing – both directly and indirectly – cyberstalking victimization.

Keywords: cyberstalking victimization, risky lifestyles, risk-seeking, student survey

Risikobereitschaft, riskante Lebensweisen und Cyberstalking - Welche Faktoren begünstigen die Viktimisierung durch Cyberstalking bei Jugendlichen? Ein empirischer Test der Selbstkontrolle/riskanter Lebensstil Mediations-Hypothese

Ziel dieses Artikels ist es, die Theorie der Selbstkontrolle/des riskanten Lebensstils auf das Risiko einer Cyberstalking-Viktimisierung in einer jüngeren Altersgruppe anzuwenden. Auf Basis einer repräsentative Schüler:innenstichprobe aus Deutschland zeigen die Ergebnisse, dass 18,2 % der repräsentativen Stichprobe von Neuntklässlern von Cyberstalking-Viktimisierung betroffen sind. Mädchen wurden häufiger viktimisiert als Jungen. Nur eine Minderheit erlebt ausschließlich Cyberstalking, während deutlich mehr Jugendliche angeben, sowohl Offline-Stalking als auch Cyberstalking erlebt zu haben. Die Ergebnisse aus den parallelen multiplen Mediationsmodellen unterstützen die Theorie der Selbstkontrolle und des Lebensstils und stehen im Einklang mit einer wachsenden Zahl von Veröffentlichungen, die darauf hinweisen, dass eine geringe Selbstkontrolle einen direkten und indirekten Einfluss auf das Risiko von Cyberstalking Viktimisierung hat. Bei beiden Geschlechtern ist die Risikobereitschaft signifikant und positiv mit dem Risiko, Opfer von Cyberstalking zu werden, verbunden, sowohl direkt als auch indirekt.

Schlagwörter: Cyberstalking-Viktimisierung, risikoreiche Lebensstile, Risikobereitschaft, Schüler*innenbefragung

1. Introduction

The internet and in particular online communication are nowadays an indispensable aspect in daily life. In parallel with positive aspects such as simple networking and rapid exchange of information, online communication also entails new risks of victimization. Although in recent years research interest in different aspects of cyber victimization such as cyber bullying or online harassment has rapidly grown, cyberstalking victimization is still relatively unstudied (Reyns et al., 2012; van Baak & Hayes, 2018). Cyberstalking can be defined as: „when an individual engages in repeated pursuit of another person via electronic or internet-capable devices" (van Baak & Hayes, 2018, p. 1 036). There is no widely agreed on definition of cyberstalking (e. g. Wilson et al., 2022a). 3Nevertheless, the above definition is in accordance with prior research as it emphasized repeated pursuit by internet-capable or electronic devices (for a list of studies in line with this definition see Reyns et al., 2011, p. 1 153). There is no consensus yet on which behaviors can be classified as cyberstalking (Wilson et al., 2022b). However, following behaviors are often cited as cyberstalking activities: sending repeated unwanted messages, harassment via e-mail, instant messengers or other online services, gathering information about a victim online, monitoring the victim using electronic means such as cameras, spreading rumors or false information online, posting private information or photos of embarrassing nature, impersonating the victim online by stealing login information of social media sites or email accounts (Baum et al., 2009; Marcum et al., 2014; Reyns et al., 2011; van Baak & Hayes, 2018).

Prevalence rates of cyberstalking victimization differ quite substantively across studies. Most research investigate cyberstalking victimization among U.S. College students with victimization prevalence ranging from one to 34.9 % (for a list of studies see Reyns et al., 2012). What almost all studies on U.S. college populations have in common is the use of convenience samples (e. g. Bossler & Holt, 2010; Reyns et al., 2011; Strawhun et al., 2013; van Baak & Hayes, 2018). However, the operationalization and definition of cyberstalking differs substantively between the studies. For example, Holt and Bossler (2009) capture online harassment, finding that 18.9 % of the sample had experienced online harassment at least once within the last 12 months. Other studies regarding online harassment report victimization rates between 15.0 and 19.3 % (Näsi et al., 2016). Van Baak and Hayes (2018) apply a narrower definition of cyberstalking and report a victimization rate of 23.4 % within the last year. This is similar to the results of Strawhun et al. (2013), who report a cyberstalking victimization rate of 20.5 % . Studies which rely on representative data are rare so far: Using the stalking supplement to the *National Crime Victimization Study*, Baum et al (2009) report that 26 % of those who experienced offline stalking were also victims of cyberstalking. Reyns et al. (2011) analyze a representative college student sample and report a cyberstalking victimization rate of 41 %. In general, few studies analyze other populations than college students (Powell et al., 2018; Reyns et al., 2012). This is surprising when considering that juveniles are especially vulnerable to online victimization in general (Marcum et al., 2014; Pereira & Matos, 2016). The few existing studies focus mostly on cyberstalking perpetration (e. g. Marcum et al., 2014; Purcell et al., 2009). With regard to online harassment victimization Wolak, Mitchell and Finkelhor (2006) report based on the nationally representative *Youth Internet Safety Survey,* that the online harassment victimization rates among seven to ten year olds increased from 6 % to 9 % between 2001 and 2006. Pereira, Spitzberg and Matos (2016) analyze a sample of 12 to 16 year old Portuguese adolescents and report a cyber-harassment victimization rate of 66.1 %.

The experience of cyberstalking can make victims feel vulnerable, isolated, anxious or distressed. Beyond this, cyberstalking victimization is associated with negative psychological consequences, such as depression, posttraumatic stress disorder or a reduced well-being (Marcum et al., 2014; Reyns et al., 2012; Wright, 2018). Furthermore, juvenile victims reported concentration difficulties in school, a higher school absenteeism rate and a decline in academic performance (Purcell et al., 2009; Wright, 2018).

There are several problematic issues regarding research on cyberstalking: 1. There is no consensus how to operationalize it (Reyns et al., 2012; van Baak & Hayes, 2018). This results in hardly comparable prevalence rates. 2. Most research relies on convenience samples (e. g. Reyns et al., 2011, 2012; van Baak & Hayes, 2018) which do not allow to deliver reliable prevalence regarding this behavior. Furthermore, 3. most research concentrates on young adults and college populations (Fox et al., 2016; Powell et al., 2018; Reyns et al., 2012). Wilson et al. (2022b) point out that especially the focus on college populations is problematic since this populations are rather well educated and therefore might not represent the experiences of the general population. Less is known with regard to adults and adolescents (Marcum et al., 2014; Powell et al., 2018; Purcell et al., 2009; Wright, 2018). Since for example Jones et al. (2012) report that online harassment appears to be increasing for youth, representative data on cyberstalking victimization of adolescents is needed. 4. Theoretical driven research on risk and protective factors is rare so far (Fox et al., 2016; Reyns et al., 2011; van Baak & Hayes, 2018). 5. Some studies on traditional stalking treat cyberstalking as form of stalking (Baum et al., 2009; Fox et al., 2016; Purcell et al., 2009). It remains therefore ambiguous whether cyberstalking is a facet of stalking or an independent behavior (Strawhun et al., 2013).

2.   Self-Control/Lifestyle Theory

Based on the observation that there is a great similarity between victims and perpetrators of violence, Schreck (1999) applied Gottfredson and Hirschi's (1990) general theory of crime on victimization. The basic assumption of the theory is that people who have lower levels of self-control have a greater propensity of engaging in deviant behavior since they prefer short-term and immediate benefits which are often associated with crime. Self-control develops in early childhood and is theorized to be influenced by parenting techniques (van Baak & Hayes, 2018). Self-control consists of six aspects: risk avoidance, preference for mental rather than physical activity, diligence, tolerance for frustration, empathy, future orientation (Schreck, 1999). Schreck (1999) argues that "individuals who lack any or all of six characteristics are at greater risk of victimization than those with more self-control, everything else being equal. [...] Behaviors and lifestyles that manifest these characteristics often result in greater vulnerability" (Schreck, 1999, p. 637). For example, people with lower levels of self-control are more likely to spend time at potentially dangerous places or engage with dangerous people (Reisig & Golladay, 2019).

Previous research has shown that a low level of self-control is indeed associated with a higher risk of experiencing crime in general (see e. g. Fox et al., 2009; Reisig & Golladay, 2019; Schreck, 1999) cybercrime (see e. g. Bossler & Holt, 2010; Mikkola et al., 2022) and cyberstalking in specific (van Baak & Hayes, 2018; Wilson et al., 2022a). Mixed findings regarding gender are reported, for example it could be shown that low self-control enhanced the risk of offline stalking victimization only for women but not for men (Fox et al., 2009; Lauritsen & Carbone-

Lopez, 2011) whereas Fox et al. (2016) find a risk enhancing effect of low self-control only for men. Pratt et al. (2014) conducted a meta analysis on the self-control-victimization link analyzing 66 studies. They report that overall self-control is a modest but consistent predictor of victimization. A stronger effect of self-control on the risk of victimization was shown for delicts which do not require face to face contact, such as online victimization. This is explained by the fact that these types of victimization require some forms of cooperation of the victim. Thus, a victim with a lower self-control might be more willing to cooperate. The authors follow that while the effect of a lack of self-control on offending is assumed to be direct, the effect of a lack of self-control on victimization is indirect. In other words: low self-control may result in the engagement in risky lifestyles which in turn may lead to victimization (Pratt et al., 2014, p. 103). The assumption that routines and lifestyle may lead to victimization is based on routine activity theory (Cohen & Felson, 1979) and the adaption of this approach on the online context as cyber-lifestyle routine activities (Griffith et al., 2023; e. g. Holt & Bossler, 2009; Reyns et al., 2011). Routine activity theory provides an explanation of how opportunities for criminal victimization arise from individuals' everyday routines and lifestyle behaviors that place them at risk (Felson, 2002). The central assumption of these theories is that a criminal act can occur whenever a motivated offender encounters a suitable target without a capable guardian (Cohen & Felson, 1979).

Reisig and Golladay summarize the existing literature on the link between low self-control, risky lifestyles and victimization, or how the authors call it, the "mediation hypothesis" (Reisig & Golladay, 2019, p. 159). They illustrate that generally existing research on the effect of risky lifestyle on victimization is supportive (see e. g. Bergmann et al., 2018; Ngo & Paternoster, 2011; Schreck et al., 2006). However, mixed evidence is reported regarding the mediation hypothesis. While some scholars report that risky lifestyles fully mediate the effect of low self-control on victimization (e. g. see Bossler & Holt, 2010; Reisig & Golladay, 2019; Turanovic & Pratt, 2014) others find only a partial mediation of risky lifestyles on the relationship between low self-control on victimization (see e. g. Ren et al., 2017). With regard to cyberstalking it could be shown that low self-control enhances the risk of cyberstalking victimization (van Baak & Hayes, 2018) however it remains unclear whether risky lifestyles can mediate this relationship.

Previous research has shown that risky lifestyles should ideally capture a collection of activities which bring individuals "into contact with risky people in risky places at risky times" (Reisig & Golladay, 2019, p. 159). This could be both, criminal and non-criminal behaviors. Regarding cyberstalking, this means that the online context seems to matter. However, it is not the mere time spent online generally that increases the victimization risk (Ngo & Paternoster, 2011) but rather the online activities. Thus, by spending more time in an online context or engaging in online activities that might bring one in closer proximity to a motivated offender, the risk of online victimization increases. Indeed Choi (2008) shows that online deviance is associated with a higher risk of online victimization. Reyns et al. (2011) use an online deviant lifestyle measure consisting of different deviant online acts such as cyber-harassment, hacking into someone's social media accounts or illegal downloading. The authors find that engaging in a deviant online lifestyle increased the risk of cyberstalking victimization. Furthermore, the usage of social media sites, such as Facebook or Instagram or others might bring individuals in close proximity to a motivated offender and thus, spending more time on such sites increases the cyber victimization risk (see Näsi et al., 2016; Reyns et al., 2011). Bossler and Holt (2009) argue that if someone communicates regularly and frequently online, that person will also

more easily form emotional bonds with people online without ever having met them offline. This makes them easier targets for motivated offenders. Besides the online context, one might encounter a motivated offender at risky offline places, such as bars or night clubs. Scholars have reported an overlap between online and offline stalking (Baum et al., 2009). This indicates that perpetrators might get in contact with potential victims also in the terrestrial world (Strawhun et al., 2013).

3. Aims of the Study

The current study aims to add to the literature by firstly presenting prevalence of cyberstalking victimization and information on the stalker based on large-scale representative data on ninth graders. Secondly, it is analyzed whether risky (online) lifestyles can mediate the effect of risk-seeking on the risk of cyberstalking victimization. Following Reisig and Golladay (2019), a range of behavioral routines, criminal and non-criminal and online and offline, are included in the analysis. Thus, in the analyses following online behaviors are included: firstly, following Choi (2008) the following deviant online behavior is included: perpetration of online harassment. Secondly, online behaviors which might bring one in close proximity to a motivated offender are included: time spent on social media sites, time spent with online communication. Additionally behaviors are included which might bring one in contact with a motivated offender in the terrestrial world: time spent unsupervised with friends, time spent at a bar or club. Separate models for boys and girls are fitted to account for the potential different mechanisms.

4. Data and Methods

As database for the analyzes serves a large self-report school survey conducted in the spring of 2017 among ninth grade students in Lower Saxony, Germany (Bergmann et al., 2019). The survey was devoted to the recording of victimizations and perpetration of violence and delinquency as well as their influencing factors. It was authorized by the state school authorities of Lower Saxony and was conducted in compliance with the ethical standards defined in the declaration of Helsinki (World Medical Association Declaration of Helsinki, 2013). The students' parents were sent a one-page information sheet containing information about the scope and content of the survey. They were required to give their consent for their children to participate. At the beginning of the survey, the students were expressly reminded of the anonymity and voluntary nature of their responses and were given the right to refuse the participation or answering of single items. Accordingly, all students and parents gave their informed consent for inclusion before they participated in the study. For the survey, school classes were randomly drawn (stratified sampling according to school types) from all classes taught in the school year 2016/2017 (except for special needs schools with another focus than learning difficulties) of the ninth grade in Lower Saxony. 658 school classes were selected for the survey. Due to the refusal of school principals to participate, the final class sample was reduced to 479 classes (corresponding to a participation rate of 72.8 % at class level). Of the 11 092 students from these classes, 8 938 took part in the survey. This corresponds to a participation rate of 80.6 % at student level. Reasons for non-participation were illness (*n* = 754), lack of parental consent

(*n* = 404), own refusal (*n* = 456), non-usability (*n* = 73) and other reasons (*n* = 467; e. g. re-writing of class tests, participation in school events) (Bergmann et al., 2019, p. 22). The interviews took place in the class setting and lasted about 90 minutes. The students filled out self-administered written questionnaires in the presence of a teacher and an instructed test leader. The final sample used for the here presented analyzes is reduced to N = 2 919 students. This is because the questions about cyberstalking victimization were not presented to all students but to only approximately a third of the juveniles. Those were likewise randomly selected. Of the final sample, one in two pupils is male (48.5 %), the average age is 14.91 years (SD: 0.72; minimum: 13 years, maximum: 18 years), and about one third of the respondents has a migration background (28.3 %). 11.1 % of the respondents grow up in families receiving some form of public support. Almost one-third of the respondents are not living with both biological parents (28.8 %).

4.1 Dependent Variable

Cyberstalking victimization: The questionnaire about stalking victimization was introduced as follows: *The following is about whether you have ever been repeatedly harassed or persecuted by a person. How often has the same person committed the following actions?* In this way, beside cyberstalking also offline stalking was assessed. Cyberstalking was captured by asking the respondents whether they had experienced the following behaviors: (1) received unsolicited emails, SMS or other digital messages; (2) have been unwantedly harassed in chats or communication forums (e. g. Facebook, WhatsApp) or via other electronic communication media; (3) received unsolicited material by e-mail, WhatsApp or other electronic means of communication, or have been given unsolicited sexual harassment by such means. The participants should indicate how often they had experienced the respective behaviors on a scale from "0 – never" to "5 – more than 10 times". Those respondents who indicated to have experienced at least one of the behaviors at least once were asked who the stalker was and if the police was informed about the stalking. Consistent with the definition of cyberstalking a participant was classified as cyberstalking victim if he or she indicated to have experienced one or more of those behaviors repeatedly, i. e. at least twice (e. g. Fox et al., 2016; Reyns et al., 2012). Additionally, if the respondent indicated that he or she had experienced two or more behaviors once the respondent was likewise classified as cyberstalking victim since he or she had experienced repeated pursuit (see van Baak & Hayes, 2018). If these criteria were met responses for each of the three items were collapsed into a binary measure where 1 = *experienced cyberstalking victimization.*

4.2 Independent Variable

Risk-seeking: Due to the multi-thematic nature of the used data basis, only risk-seeking as one facet of self-control was assessed. Although it would be desirable to base the analyses on a complete self-control scale, Pratt et al. (2014, p. 98) argue, consistent with the theoretical approach presented above, that especially "those who seek risks are attracted to pleasurable and thrilling experiences [...] that might bring them into close proximity to dangerous places and

people". Furthermore, Fox et al. (2016, p. 338) show that risk-seeking was a significant predictor for stalking victimization. Therefore, risk-seeking is assumed to be an appropriate proxy for self-control here. In order to assess risk-seeking the students were asked to answer the following four items: "I like to test my limits by doing something dangerous", "Sometimes I find it exciting to do things that can put me in danger", "I like to take a risk simply because it's fun" and "Excitement and adventure are more important to me than security". Answer categories ranged from "1 – is not correct" to "4 – is exactly right". From these assessments, a mean value was calculated. A high value on this scale represents high risk-seeking and thus a low self-control. The mean of the scale is 2.24 (SD = 0.83; Cronbach's alpha = .88). Boys score significantly higher on the risk-seeking scale than girls (mean score boys: 2.39; mean score girls: 2.10, t(2852.91) = 9.476, p<.0001).

4.3 Mediators

Risky online behaviors: Four different (risky) online behaviors are included in the analyses: *Cyber-harassment perpetration* was assessed by asking the students how often they committed one of the following behaviors during the last school term: ridiculed, insulted, abused, or threatened others online; spread rumors about other people or dissed them online; posted others' private messages, confidential information, photos, or videos online in order to out them or ridicule them; excluded others from an online group. Students were asked to identify the frequency of such occurrences on a scale of "1—never" to "6—several times a week". A mean index was calculated. The mean of the index is 1.12 (SD = 0.31).

In order to measure *time spent on social media sites* the respondents were asked to indicate how much time on average they spent on following activities: View and post comments, pictures or likes on Facebook, Instagram, Twitter, Snapchat etc. This item was measured in hours and minutes. On average the respondents spent 2.60 hours on social media (SD = 3.60 Min = 0.00; Max = 24.00).

Time spent on online communication was assessed by asking the respondents to indicate how much time on average they spend on the following activities: Reading and writing SMS, WhatsApp or Threema messages (or using another messaging service). Again, this item was measured in hours and minutes. On average the respondents spent 4.08 hours on online communication (SD = 4.53; Min = 0.00; Max = 24.00).

Risky behavior offline: Two behaviors are included in the model, which can be considered as risky behaviors that take place in the terrestrial world: *Time spent in bars* and *time spent unsupervised with friends*. Both behaviors were assessed by asking the respondents to record how many hours and minutes they spent on the following activities on an ordinary school day and on an ordinary weekend day: firstly, to be in a pub, bar, disco, movie theater, or similar event and secondly to hang out with friends outside. If a student never engaged in one of the activities queried, he or she had the option of checking "I don't do that.". These respondents were then assigned the value "zero minutes". The school day data was then multiplied by five, the weekend day data was multiplied by two, and then divided by seven to determine an average activity time per day. On average the respondents spent 0.64 hours in bars (SD = 1.07, Min = 0.00; Max = 14.00) and on average 2.79 hours unsupervised with friends (SD = 2.82, Min = 0.00; Max = 24.00).

Controls: In order to prevent modeling spurious relationships it will be controlled for the following variables: female (51.5 %), age (measured in years; mean 14.91; SD: 0.72; minimum: 13 years, maximum 18 years), migration background (28.2 %). Since the aim of this study is to analyze whether risky lifestyles can mediate the effect of high risk-seeking on the risk of cyberstalking victimization, it is controlled for offline stalking victimization. As written earlier, *offline stalking victimization* was assessed together with cyberstalking. Stalking victimization was captured by asking the respondents to indicate how often they had experienced each of 17 behaviors that could be considered as offline stalking (i. e. being followed, being threatened, receiving unwanted gifts, someone has gained unauthorized access to the living space). The participants should indicate how often they had experienced the respective behaviors on a scale from zero (never) to five (more than 10 times). Consistent with operationalization of cyberstalking and in line with the definition of stalking a participant was classified as stalking victim if he or she indicated to have experienced one or more of those behaviors repeatedly (i. e.: at least twice) or at least two of the behaviors once (e. g. Fox et al., 2016; Reyns et al., 2012, van Baak & Hayes, 2018). If these criteria were met, responses for each of the 17 items were collapsed into a binary measure where 1 = *experienced stalking victimization.* 29.0 % of the respondents experienced stalking victimization.

5. Results

5.1 Cyberstalking Victimization Prevalence

Of the representative sample, 18.2 % (N = 484) met the criteria for cyberstalking victimization over the lifespan. Girls experienced cyberstalking victimization significantly more often than boys (girls: 24.1 %; boys: 11.0 %, $x^2(1)$ =81.23, p <.001). Most respondents were stalked by acquaintances (ex-partners 44.7 %, friends 14.3 %, classmates 8.6 %). 19.6 % indicated to have been stalked by an unknown person, 2.6 % did not know who the stalker was and 10.4 % have been stalked by other persons (i. e. neighbor or parents of friends). There is a relatively large overlap between online and offline stalking victimization: 15.9 % (N = 423) experienced both forms of stalking, whereas only a minority of 2.3 % (N = 61) experienced solely cyberstalking. Solely offline stalking was experienced more often as 13.2 % (N = 351) of the respondents can be categorized as solely stalking victims.

5.2 Multivariate results

To test whether the effect of risk-seeking on the likelihood of cyberstalking victimization is mediated through risky lifestyles, parallel multiple mediation models were calculated. The Models were estimated using PROCESS v.4 (Hayes, 2022). Whereas in earlier versions of the PROCESS Macro did not allow for dichotomous dependent variable Y, v.4 does allow for dichotomous outcome variables. Separate models for boys and girls were fitted to account for the potential different mechanisms. The estimation of indirect effects in a parallel multiple mediator model with three online behaviors and two offline behaviors as mediators allows for a simultaneous test of each mechanism while accounting for the association between them.

The parallel multiple mediation analysis using ordinary least square and logistic path analysis including only boys, revealed that risk-seeking directly influenced the risk of cyberstalking victimization and indirectly through its effect on time spend on online communication. As can be seen in Figure 1 and Table 1 risk-seeking has a positive significant effect on all mediators, meaning that boys who score high on the risk-seeking scale engage more often in cyber-harassment ($a_1 = 0.072$), spend more time on social media ($a_2 = 0.389$), with online communication ($a_3 = 0.780$), in bars ($a_4 = 0.254$) and unsupervised with friends ($a_5 = 0.735$). Boys who spent more time on online communication are significantly more likely to experience cyberstalking ($b_3 = 0.093$). A bootstrap confidence interval for the indirect effect ($a_3b_3 = 0.073$) based on 10,000 bootstrap samples was entirely above zero (0.020 to 0.139). Furthermore, risk-seeking has a direct effect on the risk of experiencing cyberstalking: boys who score higher on the risk-seeking scale have a higher risk of becoming a cyberstalking victim ($c' = 0.337$). However, no significant effects are found for perpetration of cyber-harassment, time spent on social media, time spent in bars and time spent unsupervised with friends on the risk of experiencing cyberstalking.

For girls the same model was estimated, as can be seen in Figure 2 and Table 2, yet different effects are found. From the parallel multiple mediation analysis using ordinary least square and logistic path analysis, risk-seeking indirectly influenced the risk of experiencing cyberstalking through its effect on cyber-harassment perpetration. Just like boys, girls who score higher on the risk-seeking scale engage more often in cyber-harassment ($a_1 = 0.036$), spend more time on social media ($a_2 = 0.347$), with online communication ($a_3 = 0.522$), in bars ($a_4 = 0.173$) and unsupervised with friends ($a_5 = 0.573$). Girls who engage more often in cyber-harassment are significantly more likely to experience cyber-stalking ($b_1 = 0.919$). The bootstrap confidence interval based on 10 000 bootstrap samples for the indirect effect ($a_1b_1 = 0.033$) is entirely above zero (0.009 to 0.072). Furthermore, risk-seeking has a direct effect on the risk of experiencing cyberstalking: girls who score higher on the risk-seeking scale have a higher risk of becoming a cyberstalking victim ($c' = 0.549$). However, no significant effects are found for time spent on social media, time spent on online communication, time spent in bars and time spent unsupervised with friends on the risk of experiencing cyberstalking. For both genders it is controlled for age, migration background and offline stalking victimization, respectively. Stalking victimization has a significant positive effect on the risk of cyberstalking victimization for boys and girls, whereas no effects were shown for age and migration background on the risk of cyberstalking victimization.

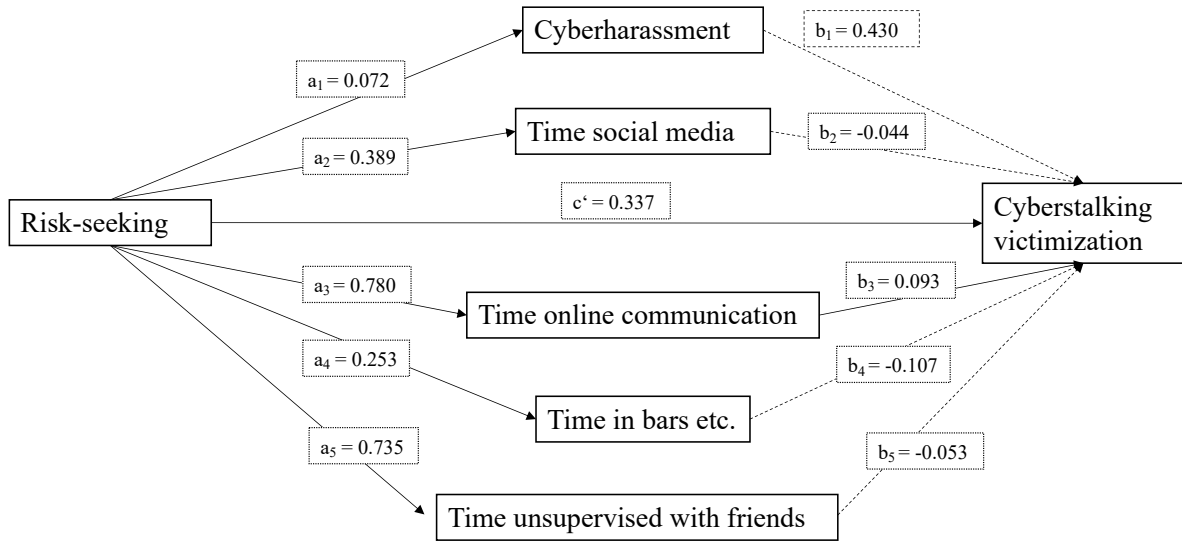*Figure 1.* Multiple mediation model, only boys (N = 1147)

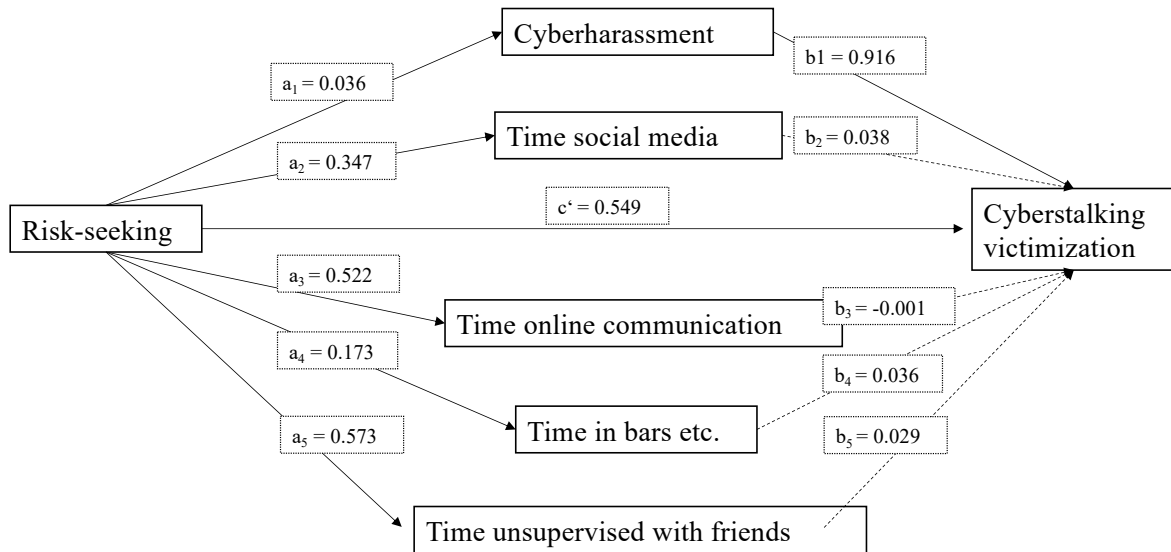*Figure 2.* Multiple mediation model, only girls (N = 1299)

Table 1. Regression Coefficients, Standard Errors, and Model Summary Information for the Cyberstalking Victimization Parallel Multiple Media Model Depicted in Figure 1

																Consequent			
		M1 Cyber-harassment			M2 Time social media			M3 Time online communication			M4 Time in bars etc.			M5 Time unsupervised with friends			Y Cyberstalking victimization	
Antecedent		Coeff. (SE)	p		Coeff. (SE)	p		Coeff. (SE)	p		Coeff. (SE)	p		Coeff. (SE)	p		Coeff. (SE)	p
Risk-seeking	a_1	0.072 (0.011)	<.001	a_2	0.389 (0.110)	<.001	a_3	0.780 (0.140)	<.001	a_4	0.253 (0.380)	<.001	a_5	0.735 (0.098)	<.001	c'	0.337 (0.156)	.031
M1 cyber-harassment																b_1	0.430 (0.321)	.180
M2 time social media																b_2	-0.044 (0.042)	.295
M3 time online comm.																b_3	0.093 (0.033)	.005
M4 time in bars etc.																b_4	-0.107 (0.124)	
M5 time unsupervised w. friends																b_5	-0.053 (0.046)	
Constant	i_{M1}	0.865 (0.198)	<.001	i_{M2}	-3.727 (2.034)	.067	i_{M3}	-13.705 (2.606)	<.001	i_{M4}	-2.991 (0.714)	<.001	i_{M5}	-6.414 (1.814)	<.001	i_y	-3.190 (2.644)	.228
Covariates																		

	Coeff. (SE)	p	Coeff. (SE)	p	Coeff. (SE)	p	Coeff. (SE)	p	Coeff. (SE)	p	Coeff. (SE)	p
Stalking Victim	0.138 (0.023)	<.001	1.070 (0.231)	<.001	1.471 (0.296)	<.001	0.066 (0.081)	.418	0.193 (0.206)	.350	3.580 (0.283)	<.001
Age	0.009 (0.013)	.666	0.324 (0.134)	.016	1.018 (0.172)	<.001	0.199 (0.047)	<.001	0.506 (0.120)	<.001	-0.120 (0.175)	.491
German	-0.076 (0.021)	<.001	-0.407 (0.210)	.174	-0.366 (0.269)	<.001	0.009 (0.074)	.906	-0.392 (0.188)	0.037	-0.476 (0.264)	.072
	$R^2 = 0.087$ $F(4,1142)$ $=12.609,$ $p<.001$		$R^2 = 0.042$ $F(4,1142)$ $=12.609, p<.001$		$R^2 = 0.085$ $F(4,1142)$ $=26.633,$ $p<.001$		$R^2 = 0.055$ $F(4,1142)$ $=16.608, p<.001$		$R^2 = 0.072$ $F(4,1142)$ $=22.244, p<.001$		$R_N^2 = 0.460$ -2 Log Likelihood = 464.690	

Note: only boys included, N = 1147; Coefficients for Y are expressed in a log-odds metric.

Table 2. Regression Coefficients, Standard Errors, and Model Summary Information for the Cyberstalking Victimization Parallel Multiple Media Model Depicted in Figure 2

			Consequent														
			M1 Cyber-harassment			M2 Time social media			M3 Time online communication			M4 Time in bars etc.			M5 Time unsupervised with friends		Y Cyberstalking victimization
Antecedent			Coeff. (SE)	p		Coeff. (SE)	p		Coeff. (SE)	p		Coeff. (SE)	p		Coeff. (SE)	p		Coeff. (SE)	p
Risk-seeking	a_1		0.036 (0.010)	<.001	a_2	0.347 (0.131)	.008	a_3	0.522 (0.158)	.001	a_4	0.173 (0.034)	< .001	a_5	0.573 (0.093)	<.001	c'	0.548 (0.107)	<.001
M1 cyber-harassment																	b_1	0.916 (0.310)	.003
M2 time social media																	b_2	0.038 (0.029)	.196

	M1 (i_{M1}/b)	p	M2 (i_{M2})	p	M3 (i_{M3})	p	M4 (i_{M4})	p	M5 (i_{M5})	p	Y (i_y/b)	p
M3 time online comm.											b_3 -0.001 (0.025)	.982
M4 time in bars etc.											b_4 0.036 (0.081)	.653
M5 time unsupervised w. friends											b_5 0.029 (0.033)	.870
Constant	0.970 (0.162)	<.001	-3.702 (2.246)	.099	-14.898 (2.702)	<.001	-2.760 (0.582)	<.001	-1.374 (1.596)	.389	-6.944 (1.961)	<.001
Covariates												
Stalking Victim	0.097 (0.162)	<.001	0.797 (0.213)	<.001	1.231 (0.257)	<.001	0.226 (0.055)	<.001	0.321 (0.152)	.034	3.216 (0.196)	<.001
Age	0.003 (0.011)	.807	0.454 (0.150)	.003	1.266 (0.181)	<.001	0.198 (0.039)	<.001	0.207 (0.107)	.052	0.101 (0.128)	.431
German	-0.022 (0.016)	.165	-1.253 (0..223)	<.001	-1.113 (0.268)	<.001	0.064 (0.058)	.266	-0.200 (0.158)	.207	0.035 (0.186)	.849
	$R^2 = 0.053$ $F_{(4, 1294)} =18.161, p<.001$		$R^2 = 0.057$ $F_{(4, 1294)} =19.525, p<.001$		$R^2 = 0.090$ $F_{(4, 1294)} =31.988, p<.001$		$R^2 = 0.062$ $F_{(4, 1294)} =21.529, p<.001$		$R^2 = 0.044$ $F_{(4, 1294)} =14.907, p<.001$		$R_N^2 = 0.515$ -2 Log Likelihood = 902.429	

Note: only girls included, N = 1299; Coefficients for Y are expressed in a log-odds metric.

6. Discussion

Although the body of literature regarding cyberstalking victimization is slowly but steadily growing, there are several problematic issues. Scholars have repeatedly pointed out, that cyberstalking research very often lacks the application of theoretical frameworks to better understand the correlates of cyberstalking victimization (e. g. Reyns et al., 2018; van Baak & Hayes, 2018). Furthermore, most evidence stems from US samples, concentrating on mostly college populations (e. g. Kabiri et al., 2021). This limits the generalizability of the findings as cyberstalking in specific and any form of deviant behavior online in general have become common place globally (Wilson et al., 2022b). Moreover, the concentration on young adults and college populations ignores the age group of adolescents. This is problematic since research could show that especially this age group is at risk to encounter online victimization (e. g. Jones et al., 2012; Pereira et al., 2016). The aim of this paper was to apply the self-control/risky lifestyle theory on the risk of cyberstalking victimization in a younger age group by using a representative student sample from Germany. By presenting representative cyberstalking victimization prevalence from another cultural setting than the US and a less studied age group, this paper contributes to the generalizability of the existing findings in the cyberstalking victimization literature. Moreover, by applying the self-control/ lifestyle theory on cyberstalking victimization this paper adds to the literature by further examining the underlying mechanisms of this victimization.

This paper reveals following key findings: First, it could be shown, that cyberstalking victimization is experienced by 18.2 % of the representative sample of ninth grades. This is comparable with reported cyberstalking victimization rates of studies using a comparable definition criteria (i. e. unwantedness and repeated pursuit) (Näsi et al., 2016; Strawhun et al., 2013; van Baak & Hayes, 2018). This result shows that adolescents are also at risk of becoming victims of cyberstalking, just like older age groups. In line with prior research (e. g. Finkelhor et al., 2000; Fox et al., 2016; Pereira & Matos, 2016; van Baak & Hayes, 2018) girls were more often victimized than boys. Most victims of cyberstalking were stalked by ex-partners, friends, or classmates. Both findings correspond to the notion that cyberstalking can be categorized as interpersonal crime, similar to intimate partner violence or sexual assault. Those crimes are different than other violent crimes in that they are more likely to be experienced by women but also are likely committed by offenders who are often the intimate partner of the victim or at least an acquaintance of the victim (Fox et al., 2016).

Second, in the offline stalking literature, there is debate about whether cyberstalking can be treated as a separate behavior (Strawhun et al., 2013) or as a facet of offline stalking (e. g. Baum et al., 2009; Fox et al., 2016; Purcell et al., 2009). The here presented findings show that only a minority experience solely cyberstalking whereas considerably more juveniles report of having experienced both, offline and cyberstalking. An overlap between offline and online stalking has been reported in prior studies (e. g. Baum et al., 2009). This finding indicates that cyberstalking might be a facet of offline stalking that uses the opportunities of the online context. However, to be able to answer this question in a more elaborated way future research should focus on the disentanglement of offline and cyberstalking.

Third, the findings from the parallel multiple mediation models support the self-control/lifestyle theory and are in accordance with a growing body of literature indicating that low self-control has a direct effect (van Baak & Hayes, 2018) and indirect effect (e. g. Kabiri et al., 2021; Reyns & Fisher, 2018) on the risk of experiencing cyberstalking. For both genders risk-seeking

is significantly and positively associated with the risk of experiencing cyberstalking victimization both directly and indirectly. The link between low self-control and risky lifestyles has been supported by prior research. (Kabiri et al., 2021; Schreck et al., 2006; Turanovic & Pratt, 2014). For boys risk-seeking influenced the likelihood of cyberstalking victimization through time spent on online communication, for girls risk-seeking influenced the likelihood of cyberstalking victimization through engagement in cyber-harassment. Both behaviors can be categorized as a risky online lifestyle (Kabiri et al., 2021; Reyns et al., 2011) which might increase the proximity and exposure to potential offenders (Reyns et al., 2011). However, no effect was found regarding risky offline behaviors on the risk of cyberstalking victimization. This might be due to the operationalization of risky offline behaviors. Time spent in bars, clubs or other events and time spent unsupervised with friends were included in the model. Both behaviors might place oneself in close proximity to strangers (e. g. Fisher et al., 2002; Silva Santos et al., 2021; Strawhun et al., 2013), who might be potential offenders of cyberstalking. Recalling that most victims were cyberstalked by acquaintances, it seems logical that behavioral routines which might bring oneself in close proximity to strangers do not increase the risk of being cyberstalked. It is rather the online context that matters and in which ex-partners, friends or other acquaintances exercise the stalking. This finding supports the need for more research on the overlap between offline and cyberstalking outlined above. Furthermore, this finding supports the notion that interactions between victim characteristic, such as victim-offender relation and theoretical concepts should be further investigated (Reyns et al., 2018) as they might play an important role "in moderating the relationships between key theoretical concepts and victimization" (Reyns et al., 2018, p.1761). For instance, being close to a motivated offender might be more important when stranger-based cyberstalking victimization is considered compared to victimization through intimate partners or acquaintances.

Although the presented study adds to the literature it is not free of limitations. First of all, although there is no widely agreed definition of cyberstalking as elaborated above, some scholars (e. g. Reyns et al., 2018) argue that a distinctive feature of cyberstalking (beside the aspects of repetition and unwantedness) is that the behavior of the stalker should "make the victim fear for his or her safety" (Strawhun et al., 2013, p. 716). In this study we do not capture this part of the definition of cyberstalking similar to the work of other scholars (e. g. Reyns et al., 2012; van Baak & Hayes, 2018). However, future research should contribute to the field of cyberstalking research by comparing the diverse definitions and the resulting prevalence to establish a common understanding and measurement of cyberstalking. Furthermore, it is important to keep track with the technological development. Silva Santos et al. (2021) point out that due to the accelerated technological development and the introduction and spread of new functions in the virtual environment, cyberstalking behaviors are likewise constantly changing. It is therefore important to monitor the technological development and incorporate relevant cyberstalking behaviors in the measurement of cyberstalking. Third, as this study was dependent on the variables that were available in the data collection, only risk-seeking as one facet of self-control was assessed. Furthermore, for the same reason multidimensional lifestyles instruments could not be included in the statistical analyzes. This might be the reason why the risk-seeking-victimization link is not fully mediated by the risky lifestyles included in this study (Reisig & Golladay, 2019). Future research should therefore use for instance a behavioral self-control scale and multidimensional lifestyle instruments to replicate the here presented findings. Finally, it should be noted that the questionnaire was only available in German. Students who did not have sufficient language skills could not participate in the survey.

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