Predicting symptomatology after rape

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Crime- and perpetrator-related predictors of symptomatology among adolescent girls after a single rape

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Msc thesis Clinical and Health Psychology

Contents

Voorwoord

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Geachte lezer,

Voor u ligt het eindresultaat van onze thesis waar wij het afgelopen semester onze ziel en zaligheid in hebben gelegd. In het kader van de master Klinische- en Gezondheidspsychologie hebben wij de kans gekregen om onze thesis te schrijven in opdracht van het Psychotraumacentrum binnen het Universitair Medisch Centrum (UMC) Utrecht. Met veel belangstelling hebben wij ons op voornamelijk vrijdagen verdiept in het verwerken van nieuwe aanmeldingen van adolescenten die een verkrachting hebben meegemaakt en het doorzoeken van hun medische dossiers ten behoeve van het onderzoek. Op deze manier hadden wij het voorrecht om alvast te proeven van de klinische praktijk.

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Wij zijn trots op het eindresultaat en hopen dat u ons onderzoek met plezier en interesse zal lezen.

Saya Berkhout & Femmy Boersma

Abstract

Objective The aim of the present study was to investigate what rape-related characteristics predict posttraumatic-stress- (PTS) and depression-related symptomatology in adolescent girls after a single rape.

Methods We conducted a retrospective study that included 279 adolescent girls who experienced a single rape and entered the University Medical Centre Utrecht between 2005 and 2011. This study focused on (a) two possible perpetrator-related predictors: The victim-perpetrator relationship and the amount of perpetrators, and (b) three possible crime-related predictors: The presence or absence of penetration, physical violence and threat with a weapon in addition to the rape. Data were gathered through file research and analyzed through five separate factorial between subjects analyses of variance (ANOVA).

Results The results revealed that of the two investigated perpetrator-related predictors, being raped by a known perpetrator predicted more severe depression related symptomatology and more general psychological discomfort. Of the three investigated crime-related predictors, being raped with penetration predicted an increase in posttraumatic stress- and depression-related symptomatology and general psychological discomfort.

Conclusion This study identified two meaningful rape-related predictors of symptomatology. This aims to be a step in the right direction for discovering more predictors that are helpful in detecting girls at high risk for developing severe symptomatology. This way, those at risk could receive additional support or treatment in an early stage to prevent later psychopathology.

Samenvatting

Doelstelling Het doel van deze studie was om te onderzoeken welke verkrachtingsgerelateerde factoren posttraumatische stress- en depressiegerelateerde symptomatologie voorspelden bij adolescente meisjes, na een eenmalige verkrachting.

Methode Retrospectief onderzoek is verricht onder 279 adolescente meisjes die een eenmalige verkrachting hebben meegemaakt en zich tussen 2005 en 2011 bij het Universitair Medisch Centrum Utrecht (UMC) hebben aangemeld. Het onderzoek richtte zich op (a) twee mogelijke dadergerelateerde voorspellers: De slachtoffer-dader relatie en het aantal daders, en (b) drie mogelijke daadgerelateerde voorspellers: De aan- of afwezigheid van penetratie, fysiek geweld en dreiging met een wapen. Data zijn verzameld doormiddel van dossieronderzoek en geanalyseerd met behulp van vijf afzonderlijke variantie-analyses (ANOVA).

Resultaten Uit de data-analyse is gebleken dat van de twee dadergerelateerde factoren, verkracht worden door een bekende dader een voorspeller bleek te zijn van ernstige depressiegerelateerde symptomatologie en ernstige algemene klachten. Van de drie mogelijke daadgerelateerde voorspellers, leidde het meemaken van een verkrachting met penetratie tot verhoogde posttraumatische stress- en depressiegerelateerde symptomatologie en ernstigere algemene klachten.

Conclusie Dit onderzoek heeft twee betekenisvolle verkrachtingsgerelateerde voorspellers van symptomatologie geïdentificeerd. Hiermee is getracht een stap in de goede richting te zetten naar het ontdekken van verschillende voorspellers, welke uiteindelijk ingezet kunnen worden bij het herkennen van verkrachtingsslachtoffers die een verhoogd risico lopen op het ontwikkelen van ernstige symptomatologie. Op deze manier kan voor deze doelgroep in een vroeg stadium gepaste hulp geboden worden om latere psychopathologie te kunnen voorkomen.

Introduction

In the general Dutch population, experiencing rape has a life-time prevalence of nearly 12% (Bakker et al., 2009). A study concerning the Dutch population revealed that one in three rape victims currently suffers from posttraumatic stress-disorder (PTSD; Bronner et al., 2009). Data from The Population Estimates Program, U.S. Census Bureau (2001) suggest that adolescents in the age range of 12–17 years old represent 34% of the rape victims (Maxwell, Robinson, & Post, 2003). This high percentage indicates that adolescent girls are at higher risk of becoming rape victims than the general population.

Additionally to this higher risk percentage, the adolescence itself is already stressful since major cognitive and emotional changes occur around this time. The experience of rape makes it for adolescent girls especially likely to develop pervasive and long lasting coping difficulties that contribute to the development of symptomatology (Kirk & Madden, 2003). Identifying predictors for symptomatology will help screen for girls high at risk for developing severe symptomatology.

There are multiple ways of explaining the onset of symptomatology. These explanations can be biological, psychological and social in nature. Following the Biopsychosocial model (Engel, 1977) all perspectives should be taken into account in order to predict severe symptomatology. This study focuses on the social perspective of this integrative model by investigating characteristics related to rape. In comparison to psychological and biological characteristics, rape-related predictors of symptomatology are useful to detect because they have the potential to screen victims high at risk briefly and rapidly at an early stage.

The introduction first describes posttraumatic stress disorder (PTSD) and depression symptomatology as a potential consequence of sexual violence, followed by a summary of current literature related to the predictors of symptomatology. Based on these findings from previous literature, the introduction ends with an overview of hypotheses that will be investigated.

Posttraumatic-stress and depression symptomatology

Tjaden and Thoennes (2006) define rape as: "*An event that occurred without the victim's consent that involved the use of threat or force in vaginal, oral or anal intercourse*". This definition includes both attempted and completed rape. As

aforementioned, the risk of developing PTSD after experiencing rape is 33.3% (Bronner et al., 2009). PTSD can be diagnosed when a person has experienced an extremely stressful or traumatic life event such as rape. Furthermore, the disorder is characterized by recurrent vivid thoughts and memories of the event, avoiding or blunting stimuli associated with the trauma and continual symptoms of increased arousal (For more details, see DSM-IV-TR; American Psychiatric Association, 2000). Exposure to rape can also make an adolescent vulnerable to other symptomatology, including a major depressive episode (MDE; Kilpatrick et al., 2003). Among American college women who were victims of rape, Zinzow et al. (2010) reported that approximately 13% met the criteria for lifetime MDE (for more details about MDE see DSM-IV-TR; American Psychiatric Association, 2000).

Crime- and perpetrator-related predictors of symptomatology

Distress after experiencing a traumatic event like rape is a common reaction. However, there are differences in severity of distress within rape victims. Rape-related characteristics possibly contribute to these differences in distress and thereby help predict the girls' severity of symptomatology post-rape. Epstein, Saunders, and Kilpatrick (1997) subcategorize rape-related characteristics into crime-, perpetrator-, victim-and aftermath-related characteristics. This study will focus on five crime- and perpetrator- related characteristics[1]. They are chosen based on clinical experience and are all related to the disturbing event itself. An overview of current literature regarding these predictors will be discussed next. However, the majority of the findings are based on the American population and are therefore not perfectly generalizable to the Dutch population.

Victim-perpetrator relationship

The first perpetrator-related predictor that is discussed is the relationship between the victim and rapist. Most victims know their rapist (Smith et al., 2000). Data from the National Incident Based Reporting System (NIBRS) showed that two third of adolescent victims were sexually assaulted by an acquaintance (Maxwell et al., 2003). Lawyer, Ruggiero, Resnick, Kilpatrick, and Saunders (2006) reported that adolescent girls who knew their assailant were at increased risk of developing PTSD and

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[1] A similar study is conducted by Boersma (2011) which focuses on the victim- and aftermath-related characteristics.

depression. In the study of Ullman, Filipas, Townsend, and Starzynski (2006) a distinction was made in the subcategorie of known perpetrators, namely between family members and acquaintances. They concluded that victims of unknown perpetrators and victims of family members were at higher risk of developing symptomatology compared to victims of acquaintances. However, this study focuses on single rapes, as opposed to multiple rapes, which are more often committed by an acquaintance of the victim than by a family member (this is probably more often a repeating event instead of a single rape). According to this assumption, it would be likely that in this study, victims of strangers are at a higher risk for developing severe symptomatology compared to victims of known (mainly acquaintances) perpetrators.

Amount of perpetrators

Another perpetrator-related predictor is the number of perpetrators involved. Being raped by two or more attackers (multiple offenders; Horvath & Kelly, 2009) seems to increase the risk of developing PTS-related symptomatology. This result came from a study conducted by Ullman (2007), where 17.9% of the rapes were committed by multiple offenders. Rape victims of multiple offenders distinguish themselves from single offender-victims, primarily because their offenders are more often strangers to them and are more likely to use physical and sexual violence during the incident. There was also more resistance from the victim when multiple attackers were involved.

Presence or absence of penetration

A crime-related predictor of symptomatology severity is the occurrence of penetration during rape. Saunders, Villeponteaux, Lipovsky, Kilpatrick, and Veronen (1992) hypothesized that more invasive acts during sexual abuse are perceived as more traumatic, with penetration as the most invasive act possible. Although not all findings (Ruggiero, McLeer, & Dixon, 2000) indicate a positive relation between penetration and PTS severity, Johnson, Pike, and Chard (2001) did find that the experience of penetration during rape positively correlated with PTS - but not with depression - severity. Similarly, Saunders et al. (1992) concluded that child sexual assault survivors who experienced penetration during abuse had the highest PTSD prevalence rates.

Physical violence and threat with a weapon

In addition to the occurrence of penetration during rape, physical violence during the abuse also appears to be a crime-related predictor for heightened PTS-symptomatology (Epstein et al., 1997; Wolfe, Sas, & Wekerle, 1994). Even within a violent and intrusive crime like rape, a specific characteristic like physical violence heightens the traumaticity of the event and the chance of developing more severe symptomatology. Furthermore, weapon display during the abuse also positively correlated with PTSD (Johnson et al., 2001). Like penetration, physical violence and weapon use also influence the intensity of the rape, thereby increasing the severity of perception of the traumatic event (Epstein et al., 1997). Victims of this sort of sexual violence were 8.5 times more likely to develop PTSD than victims of similar crimes without any additional violence (Kilpatrick et al., 1989).

Present study

The aim of the present study is to answer the main question: *Which rape-related characteristics predict symptom severity in adolescent girls after a single rape?* As mentioned before, this study will focus on crime- and perpetrator-related characteristics (Epstein et al., 1997). Furthermore, the aforementioned definition of rape (Tjaden & Thoennes, 2006) will be used. The main question will be examined using a convenience study based on a sample of 279 adolescent girls who have experienced a single rape. These girls visited the Psychotrauma Centre for Children and Youth at the University Medical Centre (UMC) in Utrecht, The Netherlands, between 2005 and 2011. The primary goal of the Psychotrauma Centre is to provide patient care. In agreement with the girls, the data were also used retrospectively for research purposes.

Five previously described crime- and perpetrator-related predictors of symptomatology will be of the subject of investigation. Based on the aforementioned findings regarding to the predictors of symptomatology, five hypothesizes are composed.

The first predictor to be investigated is the *victim-perpetrator relationship*. In confirmation with findings of Ullman et al. (2006) we expect to find that victims of strangers are at a higher risk of developing more severe symptomatology compared to known perpetrators. The second predictor refers to the *amount of perpetrators*. It is expected that rape committed by multiple offenders will lead to more severe

symptomatology. The third predictor is the *presence or absence of penetration* during the rape. We expect that rape with penetration will exhibit more severe symptomatology. Finally, *physical violence* or *threat with a weapon* is examined. In conformation to the aforementioned findings, it is expected that women who have experienced physical violence during rape will show more severe symptomatology. Likewise, it is hypothesized that being threatened with a weapon during rape will lead to more severe symptomatology as well.

Methods

Procedure

Adolescents who experienced a single rape between 2005 and 2011 were recruited into this study from consecutive referrals. Such referrals were made by a broad range of police officers, victim support workers and general practitioners to the Psychotrauma Centre of the University Medical Centre Utrecht. Rape was defined as: "*An event that occurred without the victim's consent that involved the use or threat of force in vaginal, oral or oral intercourse"*. This definition includes both attempted and completed rape (Tjaden & Thoennes, 2006).

All adolescents were evaluated with a standardized psychological assessment procedure, consisting of an assessment interview and self-reporting questionnaires. The assessment interview detailed trauma history, including information about the lifetime number of occurrences and types of trauma experienced by the victim, as well as an evaluation of trauma characteristics known to be associated with PTSD. Also, information about crime-, perpetrator-, victim- and aftermath-related characteristics was gathered in the assessment interview.

These variables were categorized as (a) perpetrator-related predictors: *Relation to the perpetrator* (known or unknown) and *the amount of perpetrators* (one or multiple) and (b) crime-related predictors: *The occurrence of penetration during rape* (yes or no), *physical violence* (being hit, bitten, strangled or kicked; yes or no) and *threat with a weapon* (yes or no).

After the initial assessment, girls receive evidence-based treatment for symptomatology that yields either cognitive behavior therapy (CBT) or eye movement desensitization and reprocessing (EMDR). The Medical Ethical Committee of the University Medical Centre Utrecht approved both procedures. Furthermore, all patients and their parents provided written informed consent.

Subjects

Of the 293 adolescents who entered the Psychotrauma Centre, 14 did not fulfill the inclusion criteria for this study because of sex (7) and age limitation (7). The final sample consisted of 279 adolescent girls in the age range of 12-25 years old. The mean age of the girls is 16.6 years (SD = 2.6). The majority of the sample

included Dutch people (87.8%) with 12.2% representing other ethnicities. The educational level of the girls is divided in lower (54.5%), middle (23.2%), higher (18.3%) and other (4.0%) levels of education.[2] Results from the Statistics Netherlands show that in the Dutch population, 26% participated in lower education, 14.2% in middle education and 59.8% in higher education (Centraal Bureau voor de Statistiek, 2010). Compared to these statistics, the girls in this study participated on average in lower levels of education.

Measures

Demographic and rape-related characteristics

Information about the girls and their experienced rape were gathered in the assessment interview and processed and stored in personal files of the girls. The demographic and rape-related characteristics were identified by research through these files and used for purposes of this study. An overview of the used measures will be discussed next.

Trauma symptom checklist for children (TSCC)

The TSCC (Briere, 1996; Dutch translation by Bal, 1998) is a 54-item self-reporting questionnaire to measure the effect of childhood trauma for children in the age range of 8 to 16 years old. The questionnaire consists of six clinical scales (Anxiety, Depression, Posttraumatic Stress, Dissociation, Anger and Sexual concerns), two validity scales (under- and hyper-response) and eight critical items. For the purpose of this study, only the subscales Depression (DEP) and Posttraumatic Stress (PTS) will be analyzed. The residual subscales are not in the interest of this study. The adolescent indicates on a 4-point Likert scale (never, sometimes, lots of time and almost all the time) how often a thought, feeling or behavior occurs. (Sub)clinical ranges were determined based on normative data for the TSCC (Briere, 1996). The Dutch translation of the TSCC has moderate to good internal consistency (Cronbach's Alpha PTS .87 and depression .86 in the clinical group) and a good factorial and convergent validity (Bal & Uvin, 2009).

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[2] *NB* Additional information about education levels for the Dutch reader: *Laag* bestaat uit VMBO gemengde leerweg, kaderberoepsgerichte leerweg, basisberoepsgerichte leerweg. '*Middel*' is ingedeeld als VMBO theoretische leerweg en *hoog* staat voor HAVO en VWO.

Children's Responses to Trauma Inventory (CRTI)

The CRTI (Alisic, Eland, Huijbregts & Kleber, 2011) is a Dutch questionnaire to measure the posttraumatic stress reaction of the child. There is both a child version (age 8 to 18) and a parent version (for parents of children from 4 to 18 years old). The questionnaire consists of 34-items divided into four subscales which contain all of the DSM-IV-TR posttraumatic stress symptoms, (Reexperiencing, Avoidance, and Irritability) and other child specific reactions. The total score is used for the purposes of this study. Adolescents are asked to indicate on a 5-point scale to what extent a certain reaction was present in the last week. The CRTI-child as well as parent version has a satisfactory to excellent internal consistency (Cronbach's Alpha ranging from .71 to .94). The CRTI-child shows in comparison to related surveys (CDI, TSCC, YSR, CRIES-13, Kidscreen-27) at least acceptable convergent validity. Although the internal consistency is satisfying, analyses do show that a few items do not fit as properly within the questionnaire. This means that scores on subscales can not be interpreted separately. In order to determine symptom severity, Alisic et al. (2011) advise to use the SVLK-total scores or possibly the PTSS-total scores.

Symptom Checklist 90 (SCL-90)

The SCL-90 (Derogatis, 1977 translated and adapted by Arrindell & Ettema, 1986) is a widely used self-report questionnaire for persons 13 years or older to measure psychological and physical symptomatology. The questionnaire consists of 90 descriptions of complaints assigned to eight subscales: Anxiety, Agoraphobia, Depression, Somatic complaints, Distrust and Interpersonal sensitivity, Insufficiency of thinking and acting, Sleeping problems and Hostility. The total score of the SCL-90 is used for purposes of this study. Adolescents are asked to indicate on a 5-point rating scale (1 = not at all, 5 = very much) to what degree he or she was distressed by the 90 complaints in the past month. The reliability is assessed as sufficient to good. The construct validity as well as the criterion validity is good (Evers, Braak, Frima, & Vliet-Mulder, 2004). Following Hoffmann and Overall (1978), the total score on the SCL-90 was reliable (Cronbach's Alpha = .975) and highly correlated with each of the factors. A single global score on the SCL-90 might well be used as an index of psychopathology or psychological discomfort (Hafkenscheid, Maassen, & Veeninga, 2007).

Children's depression inventory (CDI)

The CDI (Kovacs, 1992 translated and adapted by Timbremont & Braet 2002) is a self-reporting questionnaire for persons in the age range of 7 to 18 years. It is designed to measure depressive mood through items that measure cognitive, affective and behavioral depression symptoms. The total score gives an indication of the severity of the self-reported depressive symptoms. The questionnaire consists of 27 items with three sentences describing a feeling. The adolescents are asked to choose between the three sentences that describes best how he/she felt in the last two weeks. The reliability and construct validity are evaluated as sufficient. Because of too little research, the criterion validity is insufficient (Evers, Braak, Frima, & Vliet-Mulder, 2009).

Statistical Analysis

Five crime and perpetrator characteristics are the subject of investigation as predictors of the development of symptomatology. The following (sub)scales were used as outcome variables to measure symptom severity post-rape: The Total score of the CRTI, the subscales Depression and Posttraumatic stress of the TSCC (TSCC-DEP and TSCC-PTS), the Total score of the SCL-90 and the Total score of the CDI. For the conveniences of this study, the variables are named 'predictors', instead of 'possible predictors'.

The data were analyzed through five separate factorial between subjects Analyses of Variance (ANOVA[3]) using the statistical software program 'Statistical Package for the Social Sciences (SPSS)' version 18.0.

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[3] Data were also analyzed through Multiple Regression Analyzes and Multivariate Analysis of Variance (MANOVA). MANOVA was excluded because the correlations between the outcome variables were moderate to high ($r = .60$ to $.74$; $p < .001$). The Multiple Regression model is excluded because of its impossibility to obtain continuous variables.

Results

Rape-related characteristics

In this sample, 79.2% of the girls experienced rape with penetration and 20.8% without penetration. The average time between the occurrence of the experience and the disclosure of the disturbing event was 47 weeks ($SD = 164.8$, range 1–624 weeks). Of the girls, 58.6% disclosed their experience for the first time to peers, 16.8% to parents, 6.3% to family and 18.3% to others (for example the police, victim service or a doctor). The girls waited 68.5 weeks on average to report their rape to the Psychotrauma Centre ($SD = 124.9$, range 1–676 weeks).

More than two-third of the girls knew their perpetrator (67.4%). As was expected, 37% of assailants was an acquaintance, while only 6% was a family member to the girls. Among the 297 girls, 86.5% were sexually violated by a single perpetrator and 13.5% were raped by multiple attackers. During the rape, 30.8% of the girls experienced physical violence, 12.5% experienced threat with a weapon and 43.7% experienced verbal threats. Almost half (46.2%) of the participants reported the case to the police and 44.1% were medically examined.

One-third of the girls have had a positive sexual experience prior to the rape and 17.2% have had a negative previous experience with sex. Two-third of the girls' (67.2%) family was intact, 30.3% of the parents were divorced and 2.5% had a deceased parent.

Comparison of norm scores

The mean scores of the questionnaires used in this study are compared to norm scores of the general female population gathered from the corresponding manuals (SCL-90; Arrindell & Ettema, 2003; TSCC; Briere, 1996; CDI Dutch version; Timbremont & Braet, 2002). Notably, a large difference exists between the norm scores of the CDI and SCL-90 general female population compared to the mean scores of the current sample (see Table 1).

The CRTI norm scores of the general female population were not available. The mean norm score of the female clinical population ($M = 102.1$ $SD = 21.6$ $n = 176$) is almost similar to the mean score of the present study ($M = 102.3$, $SD = 21.2$, $n = 192$).

Table 1

Comparison of norm scores 'normal' female population with mean scores of current sample

Measure	Norm scores questionnaires			Scores current sample		
	n	*M*	*(SD)*	*n*	*M*	*(SD)*
TSCC subscales:						
- Depression	1289	51.0	(-)	226	54.5	(9.4)
- Posttraumatic stress	1294	51.0	(-)	226	58.5	(8.7)
Depression (CDI)	467	9.3	(6.5)	67	16.8	(7.4)
General complaints (SCL-90)	1041	123.1	(34.7)	76	209.0	(61.9)

Note. *n* = number of participants, *M* = mean, *SD* = standard deviation. All mean scores are based on raw scores except for the TSCC-score which is a t-score. The standard deviations of the TSCC t-scores were not available.

Crime- and perpetrator-related predictors

The main question of this study is: *What rape-related factors predict symptom severity in adolescent girls after a single rape?* First, the data is controlled for normality of the distribution and outliers. Outliers were not removed from the data, because it did not change the results significantly. Next, an overview of these results is presented while distinguishing between each type of investigated predictor.

Victim-perpetrator relationship

The first predictor for symptomatology is the *victim-perpetrator relationship*. It was expected that victims of strangers predicted more severe symptomatology compared to victims of known perpetrators. Yet, the results suggest an opposite relation: A known perpetrator causes more severe symptomatology compared to an unknown rapist. Table 2 reveals that victims of a known perpetrator show more depression-related (TSCC-DEP subscale and CDI Total score) symptoms and higher scores on the general psychological discomfort questionnaire (SCL-90) compared to victims of an unknown rapist. PTS-related questionnaires did not show a significant difference, although the CRTI Total score did reveal a trend ($p < .10$) in the same direction.

Table 2

Results of the five separate ANOVAs for the predictor 'victim-perpetrator relationship' (higher scores on the measures indicate an increase in symptom severity)

Measure	n	Known perpetrator M	(SD)	n	Unknown perpetrator M	(SD)	F (df)	p
TSCC subscales:								
- Depression	153	55.83	(9.43)	72	51.69	(8.65)	8.79 (1)	.003**
- Posttraumatic stress	153	59.18	(8.48)	72	56.99	(9.03)	2.46 (1)	.118
Depression (CDI)	127	17.72	(7.42)	67	15.15	(1.23)	5.41 (1)	.021**
General complaints (SCL-90)	155	217.93	(61.92)	76	190.96	(58.65)	8.08 (1)	.005**
Posttraumatic stress (CRTI)	129	104.82	(21.95)	69	97.00	(18.97)	3.89 (1)	.050*

Note. n = number of participants, *M* = mean, *SD* = standard deviation, *df* = degrees of freedom, *F* = test of comparison of means, *p* = test of statistical significance. * *Trend at p < .10 level, ** significant at p < .05 level.*

Amount of perpetrators

The second predictor refers to the *amount of perpetrators*. It was expected that rape committed by multiple offenders would lead to an increase in symptom severity, but this expectation could not be confirmed by the data (see Table 3). None of the scores on the depression- and PTS-related questionnaires and the general psychological discomfort questionnaire (SCL-90) showed a significant difference in symptom severity between victims of one offender and victims of multiple offenders.

Presence or absence of penetration

The third predictor for symptomatology is the *presence or absence of penetration* during the rape. It was expected that rape with penetration would exhibit more severe symptomatology. This hypothesis was partly confirmed by the data. Table 4 shows that rape victims who have experienced penetration during rape scored significantly higher on the depression-related subscale TSCC-DEP, but not on the depression-related questionnaire CDI. Also, victims of rape with penetration showed more PTS-related symptomatology on the CRTI Total score, but not on the TSCC-PTS subscale. Scores on the general psychological discomfort questionnaire were significantly higher for victims who had experienced penetration compared to victims who did not experience penetration during the rape.

Table 3

Results of the five separate ANOVAs for the predictor 'amount of perpetrators' (higher scores on the measures indicate an increase in symptom severity)

| Measure | One Perpetrator | | | Multiple Perpetrators | | | | |
	N	M	*(SD)*	N	M	*(SD)*	F (df)	p
TSCC subscales:								
- Depression	193	54.65	(9.30)	31	54.00	(9.86)	.02 (1)	.878
- Posttraumatic stress	193	58.65	(8.69)	31	57.94	(8.60)	.03 (1)	.854
Depression (CDI)	167	16.79	(7.37)	26	17.42	(7.96)	5.41 (1)	.793
General complaints (SCL-90)	197	209.73	(62.56)	33	207.76	(58.73)	.01 (1)	.918
Posttraumatic stress (CRTI)	165	102.99	(20.77)	25	99.56	(23.05)	.62 (1)	.433

Note. n = number of participants, M = mean, SD = standard deviation, $\underline{df}$ = degrees of freedom, F = test of comparison of means, p = test of statistical significance.

Table 4

Results of the five separate ANOVAs for the predictor 'presence of penetration' (higher scores on the measures indicate an increase in symptom severity)

| Measure | With penetration | | | Without Penetration | | | | |
	N	M	*(SD)*	N	M	*(SD)*	F (df)	p
TSCC subscales:								
- Depression	176	55.36	(9.59)	47	51.83	(7.82)	4.28 (1)	.040**
- PTS	176	58.93	(8.83)	47	57.23	(8.01)	.89 (1)	.347
Depression (CDI)	149	17.30	(7.56)	43	15.49	(6.96)	1.17 (1)	.281
General complaints (SCL-90)	183	214.38	(63.52)	46	190.52	(51.89)	4.18 (1)	.042**
Posttraumatic stress (CRTI)	148	104.61	(20.79)	41	95.56	(20.71)	3.98 (1)	.047**

Note. n = number of participants, M = mean, SD = standard deviation, df = degrees of freedom, F = test of comparison of means, p = test of statistical significance. ** *significant at p < .05 level.*

Physical violence and/or threat with a weapon

Finally, the predictors *physical violence* and *threat with a weapon* during the rape are examined. Women who had experienced physical violence or threat with a weapon during the rape were expected to show an increase in symptom severity. This expectation could not be confirmed by the results. The scores on the depression- and PTS- related questionnaires and the general psychological discomfort questionnaire did not significantly differ in symptom severity between victims who experienced physical violence and victims who did not (see Table 5).

Table 5

Results of the five separate ANOVAs for the predictor 'physical violence' (higher scores on the measures indicate an increase in symptom severity)

Measure	Physical Violence			No physical Violence				
	n	*M*	*(SD)*	*N*	*M*	*(SD)*	*F* (df)	*p*
TSCC subscales:								
- Depression	70	54.93	(10.58)	154	54.23	(8.77)	.71 (1)	.399
- Posttraumatic stress	70	59.31	(8.62)	154	58.09	(8.77)	1.79 (1)	.182
Depression (CDI)	56	18.18	(8.45)	138	16.30	(.94)	2.74 (1)	.100
General complaints (SCL-90)	75	211.19	(59.38)	155	207.64	(63.47)	.34 (1)	.561
Posttraumatic stress (CRTI)	55	105.22	(21.22)	135	100.81	(21.11)	2.67 (1)	.104

Note. n = number of participants, *M* = mean, *SD* = standard deviation, *df* = degrees of freedom, *F* = test of comparison of means, *p* = test of statistical significance.

The same conclusions are drawn for the predictor involving *threat with a weapon*. Scores of victims who were threatened with a weapon during the rape compared with those who were raped absent a weapon threat did not significantly differ on the depression- and PTS- related questionnaires, as well as on the general psychological discomfort questionnaire (SCL-90; see Table 6).

Table 6

Results of the five separate ANOVAs for the predictor 'threat with a weapon' (higher scores on the measures indicate an increase in symptom severity)

Measure	Weapon Involved		No weapon Involved			
	n	*M (SD)*	*n*	*M (SD)*	*F* (df)	*p*
TSCC subscales:						
- Depression	27	54.81 (8.87)	198	54.46 (9.46)	.34 (1)	.563
- Posttraumatic stress	27	57.56 (8.29)	198	58.61 (8.77)	.03 (1)	.873
Depression (CDI)	20	16.65 (7.65)	173	16.76 (7.36)	.24 (1)	.626
General complaints (SCL-90)	29	205.48 (63.31)	201	209.11 (61.82)	.07 (1)	.792
Posttraumatic Stress (CRTI)	18	100.44 (28.69)	172	102.26 (20.35)	.004 (1)	.947

Note. n = number of participants, *M* = mean, *SD* = standard deviation, *df* = degrees of freedom, *F* = test of comparison of means, *p* = test of statistical significance.

Discussion

The aim of the present study was to investigate what crime- and perpetrator-related factors predict symptom severity in adolescent girls after a single rape. This research suggests that the presence of penetration during rape appears to be a crime-related predictor for higher depression and posttraumatic stress symptomatology and for general psychological discomfort. Furthermore, it seems that when a perpetrator is known to the victim, this relationship predicts an increase in depression symptomatology and general psychological discomfort.

In addition to these findings, this section will first discuss the results for each predictor, followed by the strengths and limitations of this study. Based on these findings, recommendations for future research and the implications for clinical practice are next discussed. The discussion ends with a general conclusion of the crime-, perpetrator-, victim- and aftermath-, related predictors for symptomatology combined.

Discussion of the predictors

Victim-perpetrator relationship

The finding in this study agreed with research from Maxwell et al. (2003), that most (two-third) of the victims knew their rapist. Ullman et al. (2006) concluded that victims of unknown perpetrators and victims of family members were at a higher risk of developing symptomatology compared to victims of acquaintances. This study focused on single rapes which were - as expected - more often (37%) committed by an acquaintance of the victim than by a family member (6%). Even though the sample of known perpetrators is mainly represented by acquaintances, this study demonstrates that the victims of familiar perpetrators experience more depression-related symptomatology and general psychological discomfort in comparison to victims of unknown perpetrators.

Remarkably, victims of perpetrators that are known to the victim did not show heightened PTS-related symptomatology. It can be speculated that *the act* of rape committed by a known perpetrator is no more shocking or frightening to a victim than rape committed by an unknown perpetrator. The victim-perpetrator relationship is therefore possibly not a predictor of anxiety and re-experiencing associated to PTS-related symptomatology.

However, rape committed by a known perpetrator did predict more severe depression related symptomatology and general psychological discomfort, which conforms with previously mentioned conclusions of Lawyer' et al. (2006). Resick and Schnicke (1993) argued that perpetrators known to the victim might cause a bigger disruption of the victim's beliefs about trust and intimacy than a perpetrator would who is unrelated to the victim. Accordingly, the degree of trust the victim felt in the perpetrator prior to the rape may be a good predictor of symtomatology as well. Besides that, Ullman et al. (2006) stated that formal and informal support systems judge rapes committed by a stranger as more serious than rapes committed by a known perpetrator. This implies that victims of a known perpetrator receive less acknowledgement and may suffer from *blaming the victim*, which increases the depression related symptomatology and the general psychological discomfort.

Amount of perpetrators

Contrary to the expectations of the second hypothesis, the amount of perpetrators is not a predictor for symptom severity. Although rape committed by multiple offenders might intuitively seem more shocking and horrifying than rape committed by a single offender, it does not appear to have any effect on the symptom severity of the victim. A number of explanations can be suggested for this unexpected result. First, rape committed by multiple offenders in this study included all rapes with more than one offender present at the rape. These offenders are not necessarily all guilty participants in the act of the rape itself. For example, some offenders only facilitated the act of the rape by helping the rapist or by keeping watch. These 'accomplices', as they can be called, may have no additional impact on the development of symptomatology as a consequence of the experienced rape.

Furthermore, Gidycz and Koss (1990) stated that victims of multiple offenders were more likely to seek police and crisis services, to have contemplated suicide and to have sought therapy compared to victims of a single offender. However, in confirmation with our study, they did not find differences in depression-related symptomatology and general feelings. Gidycz and Koss (1990) also found that multiple offenders were most often unknown perpetrators, and an unknown perpetrator predicts, according to our first predictor, less severe symptomatology compared to victims of known perpetrators.

Presence or absence of penetration

The presence of penetration during rape appears to be a predictor for more severe symptomatology, based on the PTS-related questionnaire CRTI, the depression related subscale TSCC-DEP and the general psychological discomfort questionnaire. This finding is in conformation with the expectations based on previous literature (Johnson et al., 2001; Saunders et al., 1992). An explanation for this finding is that rape with penetration causes a greater infringement on the integrity of the victim in comparison to rape without penetration. The results are also consistent with the speculation of Saunders et al. (1992) who stated that invasive acts during sexual abuse are perceived as more traumatic, and penetration can be seen as the most invasive act possible.

Notably, there remains a lack of results regarding the PTS-related subscale of the TSCC and the depression related questionnaire CDI. This result is remarkable because even though the subscales are highly correlated, and are intended to measure the same symptomatology as the CRTI and the depression subscale of the TSCC respectively, they do not reveal the same results. Minor differences in the way the questionnaires measure depression and PTS symptomatology probably caused this peculiar result.

Physical violence and threat with a weapon

Despite suggestions from previous literature (Epstein et al., 1997; Kilpatrick et al., 1989), the occurrence of physical violence or threat with a weapon during rape has not proven to be a predictor of increased symptom severity for the rape victims in this study. A possible explanation for this lack of result might be that physical violence and threat with a weapon have no additional impact on the perceived intensity of the rape. Rape is one of the most shocking events a person can experience (Breslau et al., 1998) and is often perceived as life-threatening, which appears to be related to PTS symptomatology (Johnson et al., 2001). The perception of a life threat can occur whether or not the perpetrator used physical violence or threatened the victim with a weapon, and therefore may not provide meaningful additional contribution to the perception of life-threat.

Furthermore, several studies have shown that physical injury in addition to rape is related to more severe symptomatology (Johnson et al., 2001; Epstein et al., 1997). Other results might be expected when investigating physical injury instead of physical violence. Physical violence can be quite diverse in the degree of severity, and

the boundary between sexual violence (rape) and additional physical violence is likely unclear. Physical injury may be a better predictor of symptomatology because the difference between the violence related to the rape and additional violence which caused physical injury is a more clear-cut distinction.

Still, it is imaginable that additional physical violence (and possible injury) is the result of a struggle because the victim tried to defend herself. This may give the girl, irrespective of all the physical and psychological complaints, a feeling of victory and strength. It may also reduce feelings of helplessness and guilt. Thus, additional violence can be interpreted by the girl in at least two ways, which may intervene and cause the final lack of results.

Strengths and limitations

This study discriminates itself from previous research in this field by using data that are based on adolescent girls who have experienced a single rape relatively recently. This allows us to come close to a causal inference between the rape and the measured symptomatology, contrary to studies based on women of all ages - usually above 18 years old - who have experienced a rape at some point in their lives and that measure lifetime PTSD or depression. Furthermore, studies that focus on women who have experienced a rape in a distant past and that measure life-time symptomatology are, due to memory biases, less reliable.

In addition to this strength, the present study focused on a broad range of the girls' psychological conditions by measuring not only PTS-related symptomatology, but also depression-related complaints and general psychological discomfort. Furthermore, the questionnaires used in this study are reported to be satisfactory to excellent. These psychometric qualities make it possible to draw valid conclusions about the outcome measures.

Next to these noteworthy strengths within this present study, some important general limitations can be mentioned as well. The first drawback of this study is that it is based on a quite specific sample within the total population of adolescent girls who have experienced a single rape. The girls in the present research have all reached out for psychological help at the Psychotrauma Centre, and showed in almost all cases many complaints and high scores on PTS- and depression related questionnaires. This results in generally higher scores on self-report questionnaires than will probably be

found in the entire population of adolescent female single-rape victims. This lowers the generalizability of this study.

Secondly, the general high scores on symptomatology within the studied population create a so-called ceiling effect which makes it more difficult to find differences between subgroups within the sample.

A noteworthy methodological difficulty is related to the small amount of girls in some of the subgroups. For example, only 13.5% of the girls experienced a rape with more than one perpetrator involved and also only 12.5% of the girls were threatened with a weapon during the rape. This makes it more difficult to identify a possible relation between these predictors and symptom severity that may exist in the population.

Finally, the present study is also subject to limitations associated with self-report measures like desirability, recency effect, perceived consequences of openness and characteristics of the victim such as memory, health-beliefs and culture (Stone, 2009). Next to this is the fact that not all girls filled out all the self-report questionnaires due to, for example, age limitation.

Future research

Within this study, only a few of the chosen rape-related factors appeared to be of use in predicting symptom severity. Future research should focus on different rape-related characteristics in order to find new predictors of symptomatology. Suggestions for other possible predictors include school performances, the number of friends in relation to the expected social support, or the way the victim coped with previously experienced traumatic events.

Even though these suggestions are valuable to investigate, the findings of Ozer, Best, Lipsey and Weiss (2003) need to be taken into consideration. They stated that prediction of the variability in response to traumatic stressors is at best less than 20% of the total variance. On the one hand this finding suggests that several meaningful predictors - biological, psychological and social in nature (Engel, 1977) - can explain parts of the total variance which helps explain whether or not a adolescent girl develops severe symptomatology. On the other hand, in future research it needs to be taken into consideration that it appears to be impossible to fully predict future symptomatology in adolescent girls after experiencing a disturbing event.

Moreover, the predictors in this study are investigated in separate analyses. Although these univariate relationships are important building blocks for predicting models, it does not do justice to the Biopsychosocial model of Engel (1977), that indicates an interaction between biological, psychological and social factors within a person (Alisic, Jongmans, Wesel, & Kleber, 2011). In future research it might be valuable to focus on complex interactions between these factors and compose multivariate predictors that help explain more variance than previously mentioned by Ozer et al. (2003).

Besides rape-related factors, Alisic et al. (2011) stated that earlier psychological symptoms - such as symptoms of acute and short-term PTS - are the best indicators of long-term PTS-related symptomatology. Although these psychological-related characteristics are not based on factual information like rape-related factors, it does concern acute symptoms and feelings over the short term. Much like rape-related predictors, this way psychological-related predictors can be detectable at an early stage as well. In addition to this recommendation, a word of warning of Wessely and Deahl (2003) should be taken into consideration. They stated that quick disclosure of emotions might possibly be harmful. This advice needs to be further investigated before implementing the recommendation of Alisic et al. (2011).

The current literature would benefit if future research would shift its focus to identifying protective factors that shield adolescent girls from developing symptomatology. In extent to adding protective factors to future research, a similar factor is the role of resilience with regard to the development of symptomatology post-rape. Resilience seems indispensable as 'natural protective shield' and is therefore an interesting subject of investigation.

Within this study, the girls have completed several PTSD- and depression-related questionnaires in order to obtain information about their mental health functioning. The outcome of these measures provides indications of symptomatology, but no diagnosis can be determined based upon the currently used measures. For future research, it is preferable to use measures that are reliable for determining pre-treatment PTSD and depression. For example the ADIS-C (Silverman & Albano, 1996; Dutch version by Siebelink & Treffers, 2001). This measure is already conducted in some of the participants within the sample, and when the number of participants increases it can be included as a reliable instrument for future research.

Finally, this study has chosen to focus on depression- and PTS-related symptomatology, but female adolescent rape-victims are also at risk for developing other forms of distress, like anxiety- or substance use-related symptomatology, or sexual problems (Kilpatrick et al., 2003). In addition to using other measures, it may also be interesting for future research to focus on other symptomatology.

Clinical implications

Knowledge about rape-related predictors allows clinicians to screen for (future) severe symptomatology at an early stage, for example in the assessment interview. Implementing these predictors into clinical practice has benefits; it helps us predict who is at risk for future psychopathology. Also, asking rape victims about rape-related factors is less emotionally involved and avoids the negative effects of psychological debriefing (Wessely & Deahl, 2003).

Identifying multiple rape-related predictors can eventually be the beginning of an evidence-based screening tool for detecting severe symptomatology in female adolescent rape-victims. An example of a screening tool in a medical setting is STEPP (Screening Tool for Early Predictors of PTSD). STEPP is a 12-item measure that is developed to screen for the likelihood of the development of PTSD in children and parents following injury (for more information, see: Winston, Kassam-Adams, Garcia-Espana, Ittenbach, & Cnaan, 2003 and *Appendix A* for an example of STEPP). According to Nixon, Ellis, Nehmy, and Ball (2010) this screening tool is particularly adept at identifying children who developed PTSD at 6-month follow-up, but not at identifying depression symptoms. When developing a similar tool for clinical treatment, it would be valuable to focus not only on PTS-related symptomatology, but other types of symptomatology as well.

General conclusion

Originally, this study subcategorized rape-related characteristics as predictors of symptomatology into crime- and perpetrator-related characteristics as well as victim- and aftermath-related characteristics (Epstein et al., 1997). Ultimately, of the three investigated perpetrator-related characteristics, being raped by a known perpetrator predicted more severe depression related symptomatology and more general psychological discomfort. Of the two crime-related characteristics, rape

including penetration predicted an increase of PTS- and depression related symptomatology and general psychological discomfort as well.

A complementary study about the other two rape-related characteristics was conducted by Boersma (2011). The victim-related characteristics *previous positive* and *previous negative experiences with sex* and *parental divorce* appeared to have no predictive power. Of the aftermath-related characteristics, the time a girl needed to disclose her rape (*disclosure time*) did not appear to be a predictor of symptomatology either. *The first person the victim disclosed to* on the other hand, did reveal a significant relation with symptomatology. The rape victims who disclosed their rape for the first time to the subcategory others (for example medical practitioner, police or victim services) tended to predict lower PTS-related symptomatology than victims who disclosed to their peers. Hopefully, this research is a step in the right direction for developing a screening tool, useable to detect the chance of developing severe symptomatology within adolescent girls who have experienced a single rape. Victims at risk could receive additional support or treatment in an early stage to prevent later psychopathology.

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Appendix A

Screening Tool for Early Predictors of PTSD (STEPP)

	Yes	No		
Ask Parent:				
1. Did you *see* the incident (accident) in which your child got hurt?	1	0	■	
2. Were you with your child in an ambulance or helicopter on the way to the hospital?	1	0	■	
3. When your child was hurt (or when you first heard it had happened), did you feel really helpless, like you wanted to make it stop happening, but you couldn't?	1	0	■	
4. Does your child have any behavior problems or problems paying attention?	1	0		
Ask Child:	Yes	No		
5. Was anyone else hurt or killed (when you got hurt)?	1	0		■
6. Was there a time when you didn't know where your parents were?	1	0		■
7. When you got hurt, or right afterwards, did you feel really afraid?	1	0		■
8. When you got hurt, or right afterwards, did you think you might die?	1	0		■
Record From Medical Record (Do Not Ask Child or Parent):	Yes	No		
9. Suspected extremity fracture?	1	0		
10. Was pulse rate at emergency department triage >104/min if child is under 12 years or >97/min if child is 12 years or older?	1	0		■
11. Is child 12 years or older?	1	0	■	
12. Is this a girl?	1	0		■
Add Total for Each Column:				
			Positive Child Screen ≥4	Positive Parent Screen ≥3

Instruction for the completion of STEPP (Retrieved from Winston, et al., 2003)

Ask questions 1 through 4 of the parent and questions 5 through 8 of the child, and record answers to questions 9 through 12 from the acute care medical record. Circle 1 for yes and 0 for no. Instructions for scoring: The child STEPP score is the sum of responses to questions 4 through 10 and 12. A child score of 4 or higher indicates a positive screen. The parent STEPP score is the sum of responses to questions 1 through 4, 9, and 11. A parent score of 3 or higher indicates a positive screen.