Predicting symptomatology after rape

Femmy Boersma

Victim- and aftermath-related predictors of symptomatology among adolescent girls after a single rape

By Femmy Boersma - 3268500

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 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.

Graag willen wij een aantal mensen bedanken voor het mede mogelijk maken van ons eindproduct. In de eerste plaats GZ-psycholoog en onderzoeker Iva Bicanic voor haar klinische kennis, betrokkenheid en het ter beschikking stellen van haar derde kindje: Het databestand. Daarnaast natuurlijk Prof. Dr. Rolf Kleber voor zijn nuchtere en heldere kijk op het onderzoek, waarbij in het bijzonder zijn helikopterview ons tot nieuwe inzichten heeft gebracht. Maar ook Samantha Hansen enorm bedankt voor het nakijken van onze Engelse schrijfvaardigheid: You have saved us from several 'inventive' Dutch-English sentences! Tot slot de statistiek studenten op de afdeling Methode en Technieken voor het meedenken tijdens de data-analyse.

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) three possible victim-related predictors: Previous negative and positive experiences with sex and parental divorce, and (b) two possible aftermath-related predictors: The amount of time between the victim's experience of the rape to their disclosure of it, as well as the person the victim first discloses their experience to following 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 none of the three investigated victim-related characteristics appeared to be a predictor of experiencing symptom severity. Of the two investigated aftermath-related characteristics, rape victims who disclosed their rape for the first time to a person other than parents, peers or family (for example a doctor or the police) carefully predicted less severe PTS-related symptomatology in comparison to victims who first disclosed their rape to peers.

Conclusion Although this study failed to identify several meaningful rape-related predictors of symptomatology, it 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 voorspellen 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) drie mogelijke slachtoffergerelateerde voorspellers: Eerdere positieve- en negatieve ervaringen met seks en de gezinssamenstelling, en (b) twee mogelijke nasleepgerelateerde voorspellers: Tijd vanaf verkrachting tot aan de eerste onthulling en aan wie het slachtoffer de verkrachting het eerst heeft onthuld. Data zijn verzameld doormiddel van dossieronderzoek en geanalyseerd met behulp van vijf afzonderlijke variantie-analyses (ANOVA).

Resultaten Uit de data-analyses is gebleken dat geen van de drie onderzochte slachtoffergerelateerde factoren voorspellers zijn van het ontwikkelen van ernstige symptomatologie. Van de twee mogelijke nasleepgerelateerde voorspellers, bleek dat de eerste onthulling van de verkrachting aan iemand anders dan familie, leeftijdsgenoten of ouders (bijvoorbeeld arts, politie of slachtofferhulp) tot minder ernstige posttraumatische stressgerelateerde symptomatologie te hebben geleid dan het vertellen aan leeftijdsgenoten.

Conclusie Hoewel in deze studie weinig betekenisvolle verkrachtingsgerelateerde factoren zijn geïdentificeerd, is getracht een stap in de goede richting te hebben gezet voor het ontdekken van verschillende voorspellers van symptomatologie. Deze voorspellers kunnen uiteindelijk ingezet 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).

Victim- and aftermath-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 victim- and aftermath-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.

Previous negative experiences with sex

Research suggests that prior negative sexual experiences are one of the victim-related predictors for developing symptomatology after a subsequent rape incident. In an extensive study of Ullman (2007), 90% of the American adult rape-victims had endured another traumatic lifetime prior to the subsequent rape experience. In more than half of these cases, this distressing incident appeared to be childhood sexual abuse. According to Nishith, Mechanic, and Resick (2000) a cumulative impact of

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[1] A similar study is conducted by Berkhout (2011) which focuses on crime- and perpetrator- related characteristics.

childhood sexual trauma stressors and prior adult victimization appeared to contribute to current PTS severity. Macdonald, Danielson, Resnick, Saunders, and Kilpatrick (2010) confirm this finding by stating that American adolescents with a history of sexual victimization were at greater risk for developing comorbid PTS-symptomatology, substance use disorder and major depressive episodes, compared to adolescents without a history of sexual victimization.

Previous positive experiences with sex

Interestingly, if prior negative sexual experiences can predict severe distress in adulthood, this raises the question of whether positive sexual encounters prior to the sexual assault may act as protection against developing symptomatology. According to our knowledge, no research has been conducted to investigate this specific question. It does appear however that positive life experiences may mobilize adaptive coping mechanisms which reduces the long term impact of a traumatic event (Regehr, Marziali, & Jansen, 1999). In addition to this, previous positive experiences with sex possibly act as a victim-related protective factor against the development of severe symptomatology.

Parental divorce

In addition to positive experiences with sex, it is desirable that parental support is available when an adolescent girl has experienced rape. When parents are separated, this might influence the kind of support they can provide. Marital conflicts and divorce are associated with a poorer relationship quality between parents and their child, until the age of 17. Adolescents from divorced parents report feelings of less closeness, less support and more conflict with their mothers (Yu, Pettit, Lansford, Dodge, & Bates, 2010). In extent to these findings, the question rises if a broken family contributes to the development of symptomatology. Therefore this study will investigate parental divorce as a third victim-related predictor.

Disclosure time

In addition to the previously mentioned findings regarding parental divorce, Sadock and Sadock (2007) suggest that receiving support and disclosing feelings to family members act as protection against developing mental health problems. Disclosing rape shortly after the event took place decreases the risk for developing PTS-related

symptomatology (Masho & Ahmed, 2007). Furthermore, delayed disclosure (longer than 1 month post-rape) was associated with increased PTS-symptomatology and symptoms of major depressive disorder (Ruggiero et al., 2004). Therefore, delay in disclosure might act as an aftermath-related predictor for developing symptomatology. Unfortunately, results show that only 18% of the adult women disclosed their childhood-rape within 24 hours and nearly half of the women waited about five years to reveal their experience after the incident took place (Smith et al., 2000). Feelings of shame, self-blame and the fear that admission may have negative social consequences often prevents rape victims from telling their story (Sadock & Sadock, 2007).

First person to disclose to

With regard to the first person the victim discloses to, Ruggiero, McLeer, and Dixon (2000) found that disclosing rape for the first time to mothers - for girls in the age range between 6 to 16 years old - predicted healthier scores on measures of global functioning. They hypothesized that mothers would react more supportively than other individuals. Contrary to the findings of Ruggiero et al. (2000), the study of Smith et al. (2000) found no difference in the development of PTS- and depression-related symptomatology between women who disclosed to their mothers and women who did not. Interestingly, it appeared that the first person women opened up to was in most cases a close friend instead of their mother (Smith, et al., 2000; Uji, Shono, Shikai, Kitamura, 2007). These contradictory findings need to be further explored in order to find out if the person the victim discloses to is another aftermath-related predictor.

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 victim- and aftermath-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 victim- and aftermath-related predictors of symptomatology will be subject of investigation. Based on the aforementioned findings regarding to the predictors of symptomatology, several hypothesizes are composed.

The first two victim-related predictors that will be investigated are previous positive and negative experiences with sex. It is expected that *previous negative sexual experiences* predicts more severe symptomatology. With regard to the lack of specific information concerning *previous positive experiences with sex*, this analysis is considered exploratory. The third victim-related predictor to be investigated is *parental divorce*. It is expected that living with separated parents predicts more severe symptomatology.

The first aftermath-related predictor refers to the relation between *disclosure time* and the development of symptomatology. It is expected that delay in disclosure for one month or longer predicts more severe symptomatology. The second aftermath-related predictor that will be examined is the first person the victim discloses their attack to. Since research regarding this characteristic is inconclusive, the predictor *the first person to disclose to* is considered exploratory.

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) victim-related predictors: *Previous positive experiences with sex* (yes or no), *previous negative experiences with sex* (yes or no) and *parental divorce* (parents living separated or together) and (b) aftermath-related predictors: *Disclosure time* ($<$ 1 month or $\geq$ 1month) and *the first person to disclose to* (parents, family, peers and others). The subcategory *others* includes for example the police, a medical practitioner or victim services.

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 persons (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 victim and aftermath 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%). Thirty-seven percent of assailants were an acquaintance, while only 6% was family 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 a 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 a 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.

Victim- and aftermath-related predictors of symptomatology

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

Previous negative experiences with sex

The first victim-related predictor of symptomatology refers to negative experiences with sex prior to the subsequent rape incident. It was expected that previous negative sexual encounters predicted an increase in symptom severity. This expectation could not be confirmed by the data: The results show no significant difference in the scores of the depression (CDI, TSCC-DEP) -, and PTS-related subscales (CRTI, TSCC-PTS) and the general psychological discomfort subscale (SCL-90; see Table 2). However, the results do show a trend on the TSCC depression (DEP) and TSCC posttraumatic-stress (PTS) subscales ($p < .10$). Table 2 reveals that the scores remain higher for girls who have had negative experiences with sex before the rape occurs compared to victims lacking this history. These results are conform to the earlier mentioned expectation about this predictor.

Table 2

Results of the five separate ANOVAs for the predictor 'previous negative experiences with sex' (higher scores on the measures indicate an increase in symptom severity).

Measure	n	Previous negative experience with sex M (SD)	n	No previous negative experience with sex M (SD)	F (df)	p
TSCC subscales:						
- Depression	37	57.24 (8.66)	188	53.97 (9.44)	3.06 (1)	.082*
- Posttraumatic-stress	37	60.57 (8.10)	188	58.07 (8.78)	3.20 (1)	.079*
Depression (CDI)	31	17.71 (7.47)	163	16.67 (7.44)	1.00 (1)	.319
General complaints (SCL-90)	40	220.95 (51.73)	189	206.43 (60.65)	2.27 (1)	.133
Posttraumatic-stress (CRTI)	32	102.72 (18.30)	157	102.25 (20.98)	.28 (1)	.596

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.*

Previous positive experiences with sex

The second victim-related predictor is related to previous positive experiences with sex. Exploratory analysis show that none of the scores of the depression-, PTS-related subscales, and the general psychological discomfort subscale significantly differed in symptom severity based on whether or not girls experienced positive experiences with sex prior to the subsequent rape (see Table 3).

Table 3

Results of the five separate ANOVAs for the predictor 'previous positive experiences with sex' (higher scores on the measures indicate an increase in symptom severity).

Measure	n	Previous positive experience with sex M (SD)	n	No previous positive experience with sex M (SD)	F (df)	p
TSCC subscales:						
- Depression	75	55.24 (10.64)	148	54.24 (8.67)	.58 (1)	.447
- Posttraumatic-stress	75	58.67 (9.29)	148	58.56 (8.33)	.32 (1)	.572
Depression (CDI)	69	16.62 (7.87)	123	17.15 (7.09)	.02 (1)	.893
General complaints (SCL-90)	85	209.22 (65.02)	142	209.96 (55.40)	.06 (1)	.807
Posttraumatic-stress (CRTI)	68	102.99 (22.99)	119	102.60 (18.58)	.45 (1)	.505

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.

Parental divorce

The third victim-related predictor of symptom severity is *Parental divorce*. It was expected that when the parents from the victims are separated, this predicted an increase in symptom severity. The results show no significant differences in scores on the depression- and PTS-related subscales and the general psychological discomfort subscale between girls from separated parents and girls who live with both of their parents (see Table 4).

Table 4

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

Measure		Parents together		Parents separated		
	n	*M (SD)*	*n*	*M (SD)*	*F (df)*	*p*
TSCC subscales:						
- Depression	158	54.28 (9.51)	67	55.03 (9.08)	.76 (1)	.384
- Posttraumatic-stress	158	58.27 (8.71)	67	58.97 (8.75)	.40 (1)	.527
Depression (CDI)	142	17.11 (7.62)	52	16.10 (6.95)	.39 (1)	.532
General complaints (SCL-90)	162	208.65 (64.42)	69	210.00 (56.53)	.09 (1)	.763
Posttraumatic-stress (CRTI)	138	102.54 (21.28)	53	101.62 (21.54)	.01 (1)	.943

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.

Disclosure time

The first aftermath-related predictor refers to the time it took for the girl to disclose the experienced rape. It was hypothesized that delay in disclosure for one month or longer would predict an increase in symptom severity. Results do not confirm this expectation. The girls do not significantly demonstrate variance in symptom severity on the depression- and PTS- related questionnaires and the general psychological discomfort subscale (see Table 5). However, the results do reveal a trend regarding the TSCC-PTS subscale. Higher scores were found for victims who waited 1 month or longer to disclose the rape to someone. This result is in conformation to the expected findings.

Table 5

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

Measure	Disclosure < 1 month		Disclosure time ≥ 1 month			
	n	M (SD)	n	M (SD)	F (df)	p
TSCC subscales:						
- Depression	148	54.15 (10.07)	77	55.19 (7.87)	1.38 (1)	.241
- Posttraumatic-stress	148	57.74 (8.92)	77	59.91 (8.14)	3.72 (1)	.055*
Depression (CDI)	132	16.19 (7.70)	61	18.00 (6.55)	2.04 (1)	.155
General complaints (SCL-90)	153	206.46 (62.27)	77	212.58 (60.54)	.37 (1)	.543
Posttraumatic-stress (CRTI)	130	101.04 (21.93)	61	104.93 (19.80)	1.91 (1)	.168

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.*

The first person to disclose to

Finally, the second aftermath-related predictor *the person the victim discloses to* is examined. Exploratory analysis shows that the girls differ in symptom severity on the CRTI Total score regarding the first person they disclose the rape to (see Table 6).

Because the analysis is considered exploratory, a post hoc Bonferroni test (Field, 2005) is conducted in order understand which person (*parent, family member, peer* or *others*) the girl discloses to predicts an increase in symptom severity. The Bonferroni test shows that disclosing to a *peer* predicts significantly higher scores on the CRTI Total score in comparison to persons other than parents, family members and peers. The subcategory *others* includes for example the police, medical practitioner or victim services.

Table 6

Results of the five separate ANOVAs for the predictor 'first person to disclose to' (higher scores on the measures indicate an increase in symptom severity).

	First person to disclose to									
	Parents		Family		Peers		Others			
Measure	n	M (SD)	n	M (SD)	n	M (SD)	n	M (SD)	F (df)	p
TSCC subscales:										
- Depression	34	51.97 (7.47)	16	53.75 (8.14)	139	55.63 (9.72)	35	53.06 (9.83)	1.86 (3)	.137
- Posttraumatic-stress	34	57.79 (7.79)	16	58.75 (9.68)	139	58.80 (8.61)	35	57.71 (9.84)	.36 (3)	.785
Depression (CDI)	27	16.56 (6.51)	14	15.50 (6.69)	119	17.49 (7.73)	32	15.00 (7.01)	1.34 (3)	.262
General complaints (SCL-90)	36	199.47 (59.72)	15	217.67 (67.50)	138	212.96 (55.15)	38	198.05 (67.46)	1.18 (3)	.318
Posttraumatic-stress (CRTI)	26	99.85 (13.68)	14	109.43 (23.15)	117	104.81 (19.96)	31	91.71 (23.18)	4.41 (3)	.005**

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.*

Discussion

The aim of the present study was to investigate what victim- and aftermath-related factors predict symptom severity in adolescent girls after a single rape. Results indicate that the first person the victim discloses to appears to be an aftermath-related predictor, based on the Total score of the CRTI questionnaire. Disclosing to peers (school, friends, boy-/girlfriend) predicted more severe PTS-related symptomatology when compared to persons other than parents, family and peers (for example police, medical practitioners or victim services).

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

Discussion of the predictors

Previous negative experiences with sex

Despite suggestions from previous literature (Nishith et al., 2000; Ullman, 2007), the occurrence of negative sexual experiences prior to the subsequent rape incident has not proven to be a predictor of increased symptom severity in adolescent rape victims in this study. A possible explanation for this lack of result might derive from the fact that only 17% of the girls within this sample experienced a negative sexual experience that preceded the rape incident. Despite the fairly large total sample of 279 participants, this unequal distribution of the sample results because only a small group of the sample is eventually compared, making it more challenging to discern a solid result. It could be speculated that the two reported trends on the TSCC might already provide an indication of the expected result if the sample would have been more equally divided.

Another possible explanation is that these prior negative sexual experiences were most frequently merely mild assaults. Furthermore, negative experiences with sex are not involuntary by definition, but could contain other factors that led to the sexual encounters being perceived as negative. Altogether, these suggestions give reason to believe that previous, negative sexual experiences and the recent rape may

be understood as separate events, therefore not working cumulatively in relation to symptom severity.

Previous positive experiences with sex

Results from the explorative analysis within this study show that no differences in symptom severity were found between the girls with positive sexual experiences and those without these experiences. The arguments why this victim-related protective factor did not impact symptomatology within this study can only be speculated. A first reason for the failure of result could be because of the way victims experienced rape. It is generally accepted that - although prior positive sexual experiences as well as the recent rape are both related to sex - the experience of rape is negatively viewed and not conducted on a voluntary basis. According to Breslau et al. (1998), of all traumatic events, experiencing rape posed the greatest risk of developing PTSD. Therefore rape is probably viewed completely opposite from how pleasurable sex is perceived, and might be experienced as more of an extremely violent crime than as a sexual activity. Comparable to the explanation posed by prior negative experiences with sex, previous positive sexual events are therefore possibly viewed by the participants as events that are similarly not related to the rape. This understanding may explain the lack of result measured.

Secondly, although previous positive experience with sex did not predict the severity of PTS- and depression-related symptomatology, it is imaginable that sexual problems will develop over time. Unfortunately, the development of sexual problems are not measured in this study.

Parental divorce

Yu et al. (2010) indicated that adolescents experience more conflicts and less support when parents live separately. To the extent of these findings, the study could not confirm a difference in the development of symptomatology between girls from separated parents and girls with parents who live together. Although this study did not directly investigate the degree of support from parents and conflict, we did expect a similar result in terms of the development of symptomatology. A reason for this lack of result might be due to differences in cultural environment between both of the studies. The participants from the study of Yu et al. (2010) were recruited from Nashville and Knoxville, Tennessee, and Bloomington, Indiana. This Southern and

Midwestern part of the United States is generally considered to be conservative and/or Christian in comparison to the rest of the country, and residents in these areas tend to have a negative perception of divorce. The Netherlands differs from this reputation in being more liberal in general. Although it is only speculation, it might be fair to presume that in The Netherlands, living with parents who are separated is generally more accepted as normal; One third of parents are divorced in the Netherlands (Centraal Bureau voor de Statistiek, 2011). This may influence the parent-child relationship, which in turn influences the kind of support parents provide and the degree of symptomatology a child develops after experiencing rape.

Disclosure time

In contradiction to earlier findings (Masho & Ahmed, 2007; Ruggiero et al., 2004), delay in the disclosure of rape ($\geq$ 1 month) did not predict increased symptom severity in comparison to quick disclosure (< 1 month). Only one trend on the posttraumatic-stress subscale carefully pointed in the expected direction. The cut-off score around approximately one month was based on the study of Ruggiero et al. (2004) who found an interesting result within this limit. Within the current study, one-third of the participants waited one month or longer to disclose rape while the majority disclosed rape within one month. Sixty percent of the participants even disclosed their experienced rape within the first week after the disturbing event took place. Dividing the cut-off score into one group of $\leq$ 1 week disclosure time and the second group of > 1 week disclosure time, might have been more suitable for this study. *Appendix A* shows the changes in results after obtaining these new cut-off scores within the data.

Aside from the remark on the group distribution, a possible reason for not finding the hypothesized result is that disclosing quickly after rape might not be not as healthy as Masho and Ahmed (2007) claimed. According to Wessely and Deahl (2003), talking about emotions regarding a traumatic experience at an early stage has proven to be ineffective and possibly harmful to implement. In this way, not only delay in disclosure but also quick disclosure will lead to severe symptomatology without any noticeable difference in scores. Such may explain the failure of predicting symptom severity within disclosure time.

First person to disclose to

As aforementioned, the explorative analysis in this study showed that first disclosure of rape to peers predicted more severe PTS-related symptomatology in comparison to disclosure to for example police, medical practitioners or victim services (persons within the group *others*). The result is based on the total score of the CRTI questionnaire. The results are striking, since adolescents most often chose peers to disclose to in our sample (56%); Earlier research confirms this finding (Smith et al., 2000; Uji et al., 2007). Although this result is only based on the Total score of one PTS-related questionnaire, it might be an indication that social reactions from peers are more often negative, and this may help cause the increase in symptom severity. Especially in comparison to reactions from others, such as the police, medical practitioners, or victim services who give professional opinions and emphasize the girls' safety. A study of Jonzon and Lindblad (2004) support this speculation by revealing a positive relation between social reaction and current social support. Of course, such speculation also requires further investigation.

Aside from possible explanations regarding this result, three serious limitations concerning this aftermath-related predictor need notification. First, the subgroup *peers* is composed of *school, friends and boy-/girlfriend*. As mentioned in the methods section, this information is gathered from medical files and therefore acquired secondhand from therapists who interviewed the girls. Unfortunately, the group *school* appeared not only to consist of peers, but also of adult persons such as mentors. When composing this subgroup, the content of *school* should have been taken into more consideration. A revision of this predictor is performed within *appendix B*.

In addition to this limitation, the distribution of subgroups within the aftermath-related characteristic is unequally divided. As mentioned before, 56% of this sample disclosed to peers, while 44% is divided into parents, family and others. Interestingly, the results demonstrate that disclosing to family result in the highest mean score regarding symptom severity (see section Results, Table 5). Still, the *post hoc* test revealed an effect regarding peers and others. The reason for the lack of effect regarding *family* may be due to the small sample size (6% disclosed to family), which made it harder to find a solid effect in comparison to disclosing to peers. It needs to be further investigated if disclosing to family members is a predictor or protector for symptomatology as well as peers.

Third, the subcategory *others* should have been more clearly specified. File research was not distinct in the meaning of this category: It was clear that the category contained the police, victim services and medical practitioners, but the clinicians who filled in the file could also mark the category *others* itself as a remaining group. It appeared irretraceable to discover which other persons could also included as a part of the category *others*, making it more difficult to clearly interpret the aforementioned result.

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.

Additionally, current research about predictors of symptomatology has focused mainly on discovering risk factors as opposed to protective factors (Alisic et al., 2011). By measuring previous positive experiences with sex, this study not only paid attention to the risk factors for predicting the development of symptomatology in adolescents, but also considered protective factors against developing symptomatology. This makes the present study a supplement to the previously performed research.

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.

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, Jongmans, Wesel, and Kleber (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).

As previously mentioned, the current literature would benefit if future research would shift its focus to identifying protective factors that shield adolescent girls from developing symptomatology. More predictors like *previous positive experiences with sex* should therefore be included in additional research. 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 provide 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 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 C* 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 victim- and aftermath-related characteristics as well as crime- and perpetrator-related characteristics (Epstein et al., 1997). To conclude, none of the three investigated victim-related characteristics appeared to be a predictor of symptom severity. Of the two aftermath-related characteristics, rape victims who disclosed their rape for the first time to others (for example medical practitioner, police or victim services) carefully predicted less severe PTS-related symptomatology than disclosing to peers.

A complementary study about the other two rape-related characteristics was conducted by Berkhout (2011). Of the two perpetrator-related characteristic *the*

number of perpetrators involved in the rape did not appear to be a predictor of symptomatology. A *known perpetrator* on the other hand did predict more severe symptomatology. Of the three crime-related characteristics, *physical violence* and *threat with a weapon* in addition to the rape appeared to have no predictive power. The third crime-related characteristic, *rape with penetration* predicted more severe symptomatology. 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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Revised data for the predictor ´disclosure time ´

The first aftermath-related predictor is reexamined because of the unequal distribution of the group of girls who disclosed quickly in comparison to the group of girls who waited longer with disclosing to someone. Therefore, the subgroups are reorganized into one group of girls who disclosed within one week (≤ 1 week) and a group of girls who waited longer than one week with disclosing rape (> 1 week). Table 7 shows that when rape victims waited longer than one week with disclosing the rape, this predicted higher scores on the posttraumatic-stress related subscale of the TSCC questionnaire and the depression related questionnaire CDI. This result is in contrast to earlier mentioned findings regarding this predictor, since previous analysis revealed no significant differences involving times of disclosure (for more information, see *Results*).

Table 7

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

	Disclosure ≤ 1 week		Disclosure time > 1 week			
Measure	*n*	*M (SD)*	*n*	*M (SD)*	*F (df)*	*p*
TSCC subscales:						
- Depression	133	53.82 (10.01)	93	55.52 (8.28)	2.61 (1)	.108
- Posttraumatic-stress	133	57.42 (8.86)	93	60.08 (8.25)	5.30 (1)	.022**
Depression (CDI)	121	15.84 (7.29)	73	18.27 (7.29)	4.24 (1)	.041**
General complaints (SCL-90)	137	205.23 (62.74)	94	213.20 (59.66)	.73 (1)	.393
Posttraumatic-stress (CRTI)	119	100.52 (20.73)	73	105.12 (21.90)	2.60 (1)	.109

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.*

Revised data for the predictor 'first person to disclose to'

The second aftermath-related predictor *the person the victim discloses to* is reexamined, because of the unclear and erroneous content of the subgroup *peers*. Therefore the subgroups are recategorized into *family* (parents and other family members), *peers* (friends and intimate boy- or girlfriend) and *others* (persons from school and the residual category). A new exploratory analysis reveals no significant differences within the scores on the depression- (CDI, TSCC-DEP), and PTS-related subscales (CRTI, TSCC-PTS) and the general psychological discomfort subscale between the subgroups (SCL-90; see Table 8).

After revising the data for this predictor, the analysis failed to replicate earlier mentioned findings which indicated that the subcategory *peers* predicted more severe symptomatology in comparison to the subgroup *others* (for more information, see *Results*).

Table 8

Results of the five separate ANOVAs for the predictor 'first person to disclose to' (higher scores on the measures indicate an increase in symptom severity)

	First person to disclose to							
	Family		Peers		Others			
Measure	n	M	n	M	n	M	F	p
		(SD)		*(SD)*		*(SD)*	*(df)*	
TSCC subscales:								
- Depression	50	52.54	128	55.65	46	53.63	2.29	.104
		(7.65)		(9.77)		(9.70)	(1)	
- Posttraumatic-stress	50	58.10	128	58.55	46	58.65	0.06	.941
		(8.35)		(8.77)		(9.16)	(1)	
Depression (CDI)	41	16.20	108	17.21	43	16.33	.65	.522
		(6.51)		(7.46)		(8.08)	(1)	
General complaints (SCL-90)	51	204.82	128	211.85	50	204.70	.55	.578
		(61.98)		(60.65)		(64.95)	(1)	
Posttraumatic-stress (CRTI)	40	103.20	107	103.49	43	98.33	1.50	.226
		(17.89)		(21.14)		(24.62)	(1)	

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.

Appendix C

Screening Tool for Early Predictors of PTSD (STEPP)

Ask Parent:	Yes	No	Positive Child Screen ≥4	Positive Parent Screen ≥3
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.