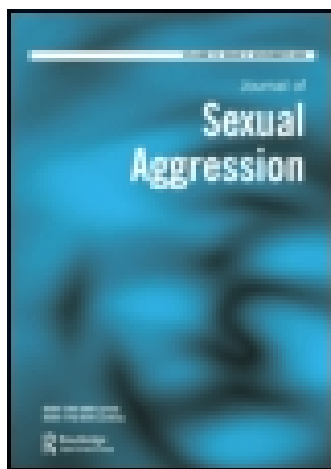


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Effects of Rock and Water: an intervention to prevent sexual aggression

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Abstract *Sexual aggression among adolescents is a common problem which is related to lack of aggression regulation, positive or permissive attitudes towards sexual coercion, group pressure and inadequate communicative skills. Rock and Water is a psycho-physical intervention which addresses these issues. We conducted a quasi-experimental trial of Rock and Water in the Netherlands. In total, 521 boys aged 14–17 from nine pre-vocational education schools were included. The primary outcome variable was sexual aggression. Secondary outcomes were sexual interaction competence, self-regulation, attitudes towards dating violence, self-efficacy and self-esteem. Data were collected prior to the intervention, immediately after the intervention and five months after termination of the intervention. Boys reported a significant reduction in coercive strategies and particularly verbal manipulation (OR = .48). At follow-up, the boys reported a significant improvement in self-regulation and general self-efficacy ($\beta = -.11$, $p < .05$ and $\beta = 1.02$, $p < .05$, respectively). Rock and Water was effective in decreasing verbal manipulation and improving self-regulation and general self-efficacy.*

Keywords *Sexual aggression; adolescents; boys; Rock and Water*

Introduction

Sexual aggression among adolescents is a common problem. A Dutch population study showed that 11% of boys and 31% of girls aged between 15 and 25 have experienced sexual victimisation (De Haas, 2012). When young people are asked whether they have victimised someone themselves, lower—but still substantial—figures were found. For example, another large population study revealed that 8% of boys and 1% of girls aged between 15 and 25 reported sexual aggression, varying from non-consensual sexual touching to forced intercourse (De Haas, Van Berlo, & Bakker, 2010). In 2000, 888 minors were questioned because of a sexual offence. However, criminal records are not representative because only few victims report their experiences to the police (De Haas, 2012).

Sexual victimisation is very disturbing for both victims (for an overview of possible psychological consequences, see Höing & Van Berlo, 2006) and society as a whole (Vanwesenbeeck, 2008). Problems can be psychological, cognitive, physical and/or sexual (Van Berlo & Mooren, 2009). Empirical research shows that adult perpetrators were relatively often victimised themselves as children (Malamuth, Sockloskie, Koss, & Tanaka, 1991). Girls who were abused in their childhood are relatively often re-victimised in later life (De Haas,

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Van Berlo, Bakker, & Vanwesenbeeck, 2012; Draijer, 1990). Experiences with sexual violence in childhood often have a negative impact on sexual development in which adolescence plays an important role (Vanwesenbeeck, Bekker, & Lenning, 1999).

There are many types of sexual aggression, such as sexual child abuse, youth sexual aggression, sexual harassment and sexual violence in an intimate relationship. Each of these types of sexual aggression has its own dynamics. In this study, we focus on sexual aggression among young people who attend regular schools. Several studies on the risk factors for the perpetration of sexual aggression have been carried out for this specific group. These studies showed that positive or permissive attitudes towards sexual coercion are a risk factor for sexual aggressive behaviour (De Bruijn, Burrie, & Van Wel, 2006; De Graaf, Meijer, Poelman, & Vanwesenbeeck, 2005; Kuyper, Wit, Adam, Woertman, & Van Berlo, 2010).

Furthermore, inadequate interactional competence (e.g. social skills needed to create positive sexual interactions that are free of coercion) seems to be related to the use of sexual coercion (De Graaf et al., 2005). A German study showed that peer pressure, anger and disinhibition (low self-regulation) were related to sexually aggressive behaviours (Krahé, 1998). Finally, parental support and monitoring (De Graaf et al., 2005) and a warm family system (De Bruijn et al., 2006) seem to be important protective factors.

Preventing sexual aggression and sexual aggression-supportive cognitions is important. There are several resilience programmes with this aim that are offered in primary and secondary schools. Rock and Water is such a programme. It is an assertiveness programme for children and adolescents developed in the Netherlands. Its objective is to improve self-control, self-reflection, self-confidence, self-efficacy, communication skills and social skills. The programme aims to prevent sexual aggressive behaviour and sexual aggression-supportive cognitions. Rock and Water is a resilience training focusing on the empowerment of both boys and girls. Safety and integrity in both personal and social dimensions are key elements in the programme, with physical communication being a common theme. The aim of the physical communication theme is to teach boys how to have physical contact with each other through playing games. They learn how to touch each other and how to deal with touch. Some games contain an element of self-defence which makes them appealing to boys. They learn that a hard Rock response to an attack is painful and creates distance, whereas a flexible Water response creates more contact between both players, is not painful and often more effective. They experience and discover that you can only be like Water when you are calm inside, centred and grounded. Body language also plays an important role: feeling and understanding the dynamics between perpetrator and victim in the case of different kinds of violence.

Adolescents learn how to say no and to listen to their feelings by way of exercises in boundary setting, eye contact and intuition. Participants also receive information on sexual aggression, male and female sexuality and homosexuality, and attention is given to the emotional aspects of sexuality.

The Rock and Water course consists of 14 lessons and is usually taught during physical education classes. The first eight lessons cover the basic principles of the course (self-defence, self-confidence, assertiveness and social skills) and can be taught in either primary or secondary schools. The next six lessons are designed for adolescents (aged 14 and over) and address sexuality, sexual aggressive behaviour and discovering one's potentials.

Rock and Water employs psycho-physical teaching methods, using physical exercise to stimulate the pupils' abilities to achieve social and mental skills. Although Rock and Water was originally developed for boys, the curricula appear suitable for girls as well. With boys, the emphasis tends to be more on self-control, self-reflection and self-confidence. The course is hence physical in nature. It is supported by brief group discussions, which include room for

self-reflection and short assignments. Implementation of the programme is coordinated by the Gadaku Institute.

Registration figures recorded by the Gadaku Institute show that the Rock and Water course has been widely implemented and it satisfies an obvious need. Since 1999, 40,000 participants have been trained in 12 countries: the Netherlands (516 schools in 2012 and about 20,000 Dutch participants in 2013), Australia, Belgium, China, France, Germany, Indonesia, New Zealand, Singapore, Taiwan and the UK. The highest uptake is in the Netherlands with 516 schools taking part in 2012 and about 20,000 Dutch trainers in 2013. The programme is also offered by welfare agencies, youth services, prisons and several mental health agencies.

Results of several small-scale evaluation studies—mostly qualitative studies and some unpublished pre-post studies—indicate that after completing the course participants feel more resilient, have a more positive sense of identity and experience a significant shift from passive to active coping styles when confronting difficult situations (Ykema, 2006).

Despite these promising results, the programme still needed to be evaluated by carrying out a thorough effectiveness study. Given the widespread use of Rock and Water, evaluation of its effectiveness was long overdue and opportune.

The objective of this study is to evaluate the effects of Rock and Water in the Netherlands.

Method

Design overview

The study was conducted in nine schools for pre-vocational education (in Dutch “VMBO” schools). These schools provide a four-year curriculum for students aged from 12 to 16/17 who start at grade one and graduate at grade four. In each grade, the education levels are divided into four levels, where level one is the lowest and level four the highest level. Students of all four levels were included. The target groups consisted of boys aged 14–17. Research shows that a quarter of 14- to 15-year-olds and more than half of 16- to 17-year-olds have experienced sexual intercourse (De Graaf et al., 2005).

An appeal to participate in the study was launched on the Rock and Water website. Schools were randomly selected and approached by telephone. Interested schools were visited so that the procedure and investment could be explained. Schools with comparable programmes were excluded from the study. To promote recruitment, all participating schools were offered a free Rock and Water professional training. For the control schools, this occurred after an assessment had taken place. Parents of 12- to 15-year-old pupils were asked for passive consent. Ethical approval had been granted by an independent medical ethics committee.

We conducted a pragmatic quasi-experimental trial. Nine schools participated, of which six were randomly assigned in matched clusters to the experimental or control group and three were matched without randomisation. For one school it was not possible to separate the boys and girls during physical education and to arrange for two teachers to give the Rock and Water training. For this reason, the school was assigned to the control group and another school was matched. Two schools could not be randomised because one paired school dropped out after randomisation. Because the other school had already been randomised to a Rock and Water training, we decided to match this school to another school.

The matching variables were education level, ethnicity, school size and urbanisation. Three to six classes per school participated in the study, 42 classes in total. Four schools

participated as control schools, four as experimental schools and in one school both experimental and control groups participated. Power analysis indicated that 230 respondents per condition at baseline measurement were required in order to reliably detect a medium-sized effect ($d > .32$) in a one-sided test at $p = .05$ and a power of .80. Data were collected previous to the intervention (t_0), immediately after the intervention (t_1) and four to five months after termination of the intervention (t_2).

Figure 1 outlines the various steps in the study. Nine schools were asked to assign pupils to the Rock and Water training or control group, 296 and 181 boys, respectively. A total of 521 pupils filled in the baseline questionnaire: 260 in the experimental and 261 in the control group. After three months (post-test), 518 pupils completed the questionnaire: 256 (98.5%) in the Rock and Water group and 262 (100.4%) in the control schools. It should be noted that the post-measurement figures for the control schools were above 100% because of the dropout at baseline measurement. The questionnaires were handed out in classrooms, and some pupils were absent because of illness or other appointments. At follow-up assessment, 464 boys completed the questionnaire: 233 (89.6%) in the Rock and Water group and 231 (88.5%) in the control schools.

Rock and Water

In the intervention, the physical exercises are consistently linked with intellectual and social skills. Within the Rock and Water programme, there are three basic skills: *self-control*, which is controlling and focusing one's own energy; *self-reflection*, which is evaluating and thinking about one's own actions and their impacts; and *self-confidence*, which is the self-knowledge needed to adjust one's own behaviour, an area that is also closely linked to the goal of self-respect (Ykema, 2002b). Building on this foundation, the programme considers the themes of safety, assertiveness, communication and finding one's own way (the inner compass) that connects them to others (solidarity) and gives them direction (spirituality; Ykema, 2003).

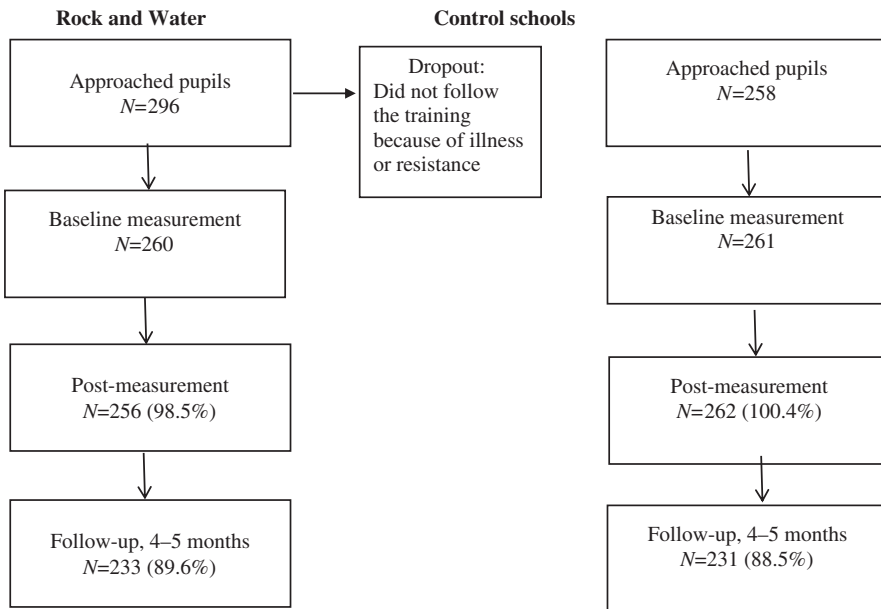


FIGURE 1. Flow of participants through the study.

The symbolic references are an important component of the Rock and Water programme. For instance, “rock” represents a rigid and uncompromising approach to life, while “water” symbolises flexibility, communication and cooperation. The programme teaches the consequences, both positive and negative, of approaching the world in either a “rock” or “water” manner. The intervention consists of several exercises for the trainer to choose from. While there is flexibility in the application of the intervention, the key elements of physical, social and mental resilience are always practiced in the exercises.

The primary outcome measure in this study was sexual aggression.

In the lessons, attention was paid to three subjects in order to meet this goal: (1) resilience, (2) respect and (3) sexual violence. First, resilience consists of physical, social and mental resilience. Exercises in physical resilience were aimed at centring, grounding and breathing. Exercises in social resilience were aimed at body language, feeling, setting and respecting boundaries, intuition, making contact, standing up for oneself and communication skills. Exercises in mental resilience were aimed at setting goals, focusing on concentration and perseverance. Second, the subject entailed special attention being paid to etiquette, stressing respect for each other and the rules that make the situation safe for everybody. Third, sexual violence was an issue that was explained, demonstrated and discussed. A Rock and Water DVD containing scenes relating to the following topics is available as follow-up: (1) body language, (2) making contact with a girl while ignoring her personal space, feeling and respecting other people’s boundaries, (3) sexual harassment, peer pressure and homophobia, (4) peer pressure and physical violence and (5) date rape. This DVD was shown to the teenagers and discussed. In addition to this, all the boys had to fill in a questionnaire testing their knowledge on different forms of sexual violence. This was followed up by a group discussion.

In this study, the intervention was standardised for implementation in the nine participating schools. Schools could choose between seven blocks of 90 minutes or 10 single lessons of 60 minutes (once or twice weekly). Four schools taught the programme as seven blocks and one school delivered the 10 lessons. All boys were prepared for Rock and Water in mentor lessons. For this study, the programme developer selected exercises from all Rock and Water exercises. First, all lessons focused on the pupils’ physical, social and mental resilience. Second, because the effect study was focused on sexual aggression, special attention was paid to etiquette, highlighting respect for each other and respect for boundaries in particular. Exercises on sexual violence were also chosen.

Integrity

Successful implementation of Rock and Water relies on three factors. First, the programme content must be clear. For this reason, a training manual and a workbook explaining all the physical exercises are available for teachers.

Second, trainers need to attend a training course. The teachers of the experimental group completed the three-day training course in the Gadaku Institute. This training was designed for the standardised version of seven block lessons or 10 single lessons in seven weeks that was developed for this study. Because the teachers were not experienced in giving Rock and Water lessons, they attended one extra training day after three months. All teachers received a certificate after the training course. The trainers at the Rock and Water Institute monitored and guided the teachers in implementing the programme appropriately and consistently during the study.

Third, a supportive environment within the school is important—and this is the aim of the “One-day Rock and Water Introductory Workshop”. This workshop introduces other staff

in the school to the basics of the programme, including the grounding and centring exercises, “standing strong” and “rock” and “water” attitudes in physical and verbal communication. As such, it allows them to familiarise themselves with the underpinning principles of Rock and Water, its language and concept.

It should be noted that implementation in the schools was not ideal. First, the trainers were inexperienced. Because of the study design, we only recruited schools that did not already offer Rock and Water. Results of some Dutch studies show that the quality of the implementation increases when teachers have sufficient time to practice the innovation (Fleuren et al., 2002; Wensing, Van Splunteren, Hulscher & Grol, 2000). In this study, however, the teachers started directly after the training course. As well as this, not all schools followed the entire one-day Rock and Water Introductory Workshop because of lack of time. Furthermore, not all lessons were completed. We asked all teachers ($n = 15$) to fill in a registration form with the following information about each lesson: students’ attendance; time for preparation on a 5-point scale (definitely not enough to definitely enough); realisation of the exercises; time and knowledge required to conduct the lesson; incidents during the lesson; and keeping the attention of the boys and teacher’s satisfaction with the lesson.

Despite efforts to gather all forms, only 9 of the 15 teachers completed these (60%), across four participating schools. Seven lessons on Rock and Water were given in these schools which meant that forms from 63 lessons were gathered. The mean percentage of completeness of all lessons was 74%. The most frequently given reason for not completing the lesson was lack of time. The second most frequently given reason was the teacher’s decision to adapt the intervention to the pupils’ perception of their situation. For this reason, parts were left out or altered. The third most frequently given reason was the timing of the lesson. The course was often taught at the end of the day, which was not a popular time.

The registration forms show that the teachers reported a mean score of 3.98 for satisfaction with the completed exercises on a 1–5 scale (very unsatisfied to very satisfied). The teachers also evaluated each lesson on a scale of 1–10. The mean score for all lessons was 6.82 (range: 5.75–7.75). Furthermore, the teachers reported success in keeping pupils’ attention in 68.18% of the lessons, keeping their attention a little in 21.21% of the lessons and not keeping their attention in 7.58% of the lessons.

Supporting materials were also distributed. Pupils received a certificate and a Rock and Water key ring after the training. The schools received posters promoting the basic themes of Rock and Water. The programme was given during physical education classes. It began at the start of the new school year so that the baseline measurement and both follow-ups could take place within that year.

Measures

The primary outcome measure is sexual aggression. The following questionnaires were used:

Sexual Experience Survey, adapted version. The Sexual Experience Survey (SES) assesses sexual aggression and victimisation. For this study, only the perpetration part was used (Koss et al., 2007). The survey was adapted and translated into Dutch by Kuyper et al. (2010) and consists of 12 questions. The boys were asked whether they had used coercive strategies, e.g. “I became angry to get sex” or “I used force (holding someone down with my body weight, pinning his/her arms, or using a weapon) to get sex”. Scores on a 3-point scale (never, once, more than once) could be given. When someone confirmed that they had used a coercive strategy, a serial question was asked about the sexual behaviour (e.g., kissing or sexual intercourse). Scores were computed on three levels. First, they were calculated per coercive

strategy. Second, a total score per respondent was calculated. Third, the coercive strategies were divided into three subscales: verbal pressure, exploitation of the victim's inability to resist and threat or use of force. This questionnaire assesses sexual aggression over the past six months. Therefore, it was only taken at baseline and follow-up assessment, as post-assessment took place just three months after the baseline measurement.

SES—non-contact sexual aggression part, adapted version. This questionnaire was developed by Koss et al. (2007) and translated to Dutch by De Haas (2012; Koss et al., 2007). It consists of 11 items relating to sexual aggression with no physical sexual contact (“hands-off”), e.g., making sexually hurtful remarks or showing pornographic photographs. This was scored on a 3-point scale (never, once and more than once). When someone confirmed that they had perpetrated non-contact sexual aggression, a serial question was asked about the context (in real life versus the Internet). Scores were computed on three levels. First, per behaviour scores were calculated. Second, a total score per respondent was calculated. Third, sexual aggression was divided into two subscales: direct sexual aggression and media-related sexual aggression.

The secondary outcome measure is the cognitions and attitudes of sexual aggression and risk factors. The following questionnaires were used to measure the secondary outcomes:

(Sexual) interaction competence scale. This scale assesses knowledge, cognitions and emotions with regard to sexuality and sexual behaviour (De Graaf et al., 2005). Scales included gender conservatism and interaction competence, with the subscales communication, assertiveness, control and self-confidence. The scale was validated within the framework of the evaluation of the study *Sex under 25* (De Graaf et al., 2005). Adequate internal consistency was found in a study among 4500 girls and boys aged between 12 and 25 ($\alpha = .84$). We conducted explorative factor analyses in order to test whether subscales were appropriate for our sample. We found two subscales: control ($\alpha = .79$, $\alpha = .81$ and $\alpha = .89$ at baseline, post-test and follow-up assessment, respectively) and assertiveness ($\alpha = .83$, $\alpha = .83$, $\alpha = .89$ at baseline, post-test and follow-up assessment, respectively). The subscale control measures the experienced control and the subscale assertiveness measures the assertiveness of boys' own sexual experiences.

Self-regulation scale. This scale consists of four items and assesses self-regulation of youngsters (Krahé, 1998). Responses were coded on a 5-point scale ranging from 1 (never) to 5 (very often). Adequate internal consistency had been found in Krahé's study to assess disinhibition among adolescents ($\alpha = .63$). In this study, adequate internal consistency was found for this scale ($\alpha = .75$, $\alpha = .80$, $\alpha = .87$ at baseline, post-test and follow-up assessment, respectively).

Attitudes towards dating violence scales. Six items on the subscale *Attitude towards sexual pressure used by men* are used (Price et al., 1999). This scale was used in a Dutch survey (Kuyper et al., 2010, $\alpha = .84$). In this study, adequate internal consistency was found for this scale ($\alpha = .84$, $\alpha = .86$, $\alpha = .92$ at baseline, post-test and follow-up assessment, respectively).

The General Self-Efficacy Scale. The General Self-Efficacy Scale (GSES) is a 10-item psychometric scale designed to assess optimistic self-beliefs to cope with a variety of difficult demands in life (Schwarzer & Jerusalem, 1995). The response format is on a 4-point scale: not at all true, hardly true, moderately true and exactly true. The scale was originally developed in

Germany by Jerusalem and Schwarzer in 1981 and has been used in many studies with hundreds of thousands of participants. The scale explicitly refers to personal agency, i.e. the belief that one's actions are responsible for successful outcomes. Perceived self-efficacy is a prospective and operative construct. The norm score is 31.14 on a 10- to 40-point scale. In this study, adequate internal consistency was found for this scale ($\alpha = .91$, $\alpha = .94$, $\alpha = .96$ at baseline, post-test and follow-up assessment, respectively).

The Rosenberg Self-Esteem Scale. This scale consists of 10 items and assesses a person's overall evaluation of his or her worthiness as a human being (Rosenberg, 1965). Responses were coded on a 4-point scale ranging from 1 (strongly disagree) to 4 (strongly agree). The Rosenberg Self-Esteem Scale (RSES) contains an equal number of positively worded (e.g., people feeling satisfied with life) and negatively worded (e.g., people feeling they are failures) items. The norm score is 31.6 on a 10- to 40-point scale, e.g. "In general I am happy with myself". In this study, adequate internal consistency was found for this scale ($\alpha = .76$, $\alpha = .81$ and $\alpha = .79$ at baseline, post-test and follow-up assessment, respectively).

Analyses

Before the data were analysed, missing data were imputed. Not all respondents returned the post-test and follow-up test questionnaires. In order to compensate, missing values were imputed using "predictive mean matching" (Van Buuren, 2012). This procedure is based on a regression model. For each missing value, the model imputes a value randomly from a set of observed values whose predicted values are closest to the predicted value for the missing value from the simulated regression model.

Because respondents were recruited from nine schools, the data were nested. As such, the assumption of independence of observations was violated, which affects standard errors and p values. Robust standard errors and correct p values were obtained using the first-order Taylor series linearisation method as implemented in Stata 9.1 (StataCorp, 2013). Despite random allocation to the research conditions, there were four significant differences between the experimental group and the control group at baseline. Confounding variables were education level, ethnicity and religion/belief, and experience of sexual intercourse.

The boys in the control group were significantly more highly educated than those in the experimental group ($\chi(3) = 105.28$, $p < .001$, Cramer's $V = .46$). Furthermore, significant differences between groups were found on the variables of: ethnic background ($\chi(4) = 10.21$, $p < .05$, Cramer's $V = .14$), religion ($\chi(1) = 5.13$, $p < .05$, Cramer's $V = .10$) and sexual intercourse ($\chi(1) = 4.18$, $p < .05$). Because of the large effect of education level and small effects of the other variables, we only controlled for education level. Taking the data characteristics mentioned above into account, we compared the effects of Rock and Water to the control condition by regressing the imputed outcome measures on the randomisation dummy while adjusting for the cluster effect and controlling for the confounding variable. To investigate the effects of Rock and Water, analyses were performed using the survey regression command in Stata 9.1 (StataCorp, 2013). Logistic regression was used for the dichotomous variables and regression analyses were used for the continuous variables.

Further analyses were performed to explore which individuals benefited the most from Rock and Water. We examined whether ethnic background, sexual experience, experience of intercourse experience, living situation and relationship with parents affected the outcomes of Rock and Water. In order to test which features of the respondents interacted with the treatment dummy, interaction terms were created by means of linear regression analyses. We

tested whether these interaction terms significantly contributed to the various outcome measures. Since we did not specify the direction of the interaction effects, they were tested in a two-sided test. Because we conducted a large number of analyses (27 analyses for each interaction term, 135 analyses in total), we tested with an α of .01. No interaction effects were found and will therefore be disregarded in the description of the results.

Results

Participants

Table I presents an overview of the socio-demographic characteristics and baseline scores of the two groups of boys. The mean age of the boys was 15.2 years. Almost two thirds of the boys were in the third class of the pre-vocational education school (In Dutch “VMBO”), and one third in the fourth class. There was no difference in age or proportions by grade between the intervention and control group. It is worth noting that several boys indicated having Dutch nationality rather than their official nationality. More than half of the boys in both groups reported that religiosity (Christian or Islamic) does not play an important role in their lives. Boys in the intervention group reported that religiosity plays a significantly more important role ($\chi(1) = 5.13, p < .05$). This has a small effect (Cramer’s $V = .10$).

No differences were found between the groups in terms of alcohol use. The percentage who drink alcohol on weekdays is 21% and at weekends is 39%.

More than 40% of the boys reported being sexually experienced. Definitions of sex varied from sexual touching and oral sex to sexual intercourse. There were no differences found between the groups. Respondents had on average four sexual partners, although the range is between 1 and 50 partners. The most popular ways to meet partners are at nightclubs, through friends and at school. The boys in the intervention group reported significantly more experience of sexual intercourse ($\chi(1) = 4.18, p < .05$). This is a small effect. The mean age to have sexual intercourse is 14 years.

Baseline characteristics of the participants

Sexual aggression. In the past three months, more than 40% of the young people used coercive strategies to obtain sexual contact, which varied from sexual touching to intercourse. In the experimental and control groups, verbal pressure was used most often (47.3% and 39.8%, respectively), compared with exploitation of the victim’s inability to resist and threat or use of force. Half of the youngsters reported the perpetration of non-physical sexual aggression, e.g., making sexually hurtful remarks or looking at someone in a sexual way, at least once during the past three months. This behaviour occurs more often in “real life” than on the Internet. No significant differences were found between the two groups.

Cognitions and attitudes. In both groups, the boys reported a great extent of control over their sexual experiences, with a mean of 4 on a scale of 1–5 for both groups. Their assertiveness was neutral, with a mean of 3.1. The scores on the self-regulation scale were high, with a mean of 4.4. The boys had a slightly rejecting attitude towards sexual pressure, with a mean of 2.2. No significant differences were found between the two groups.

In both groups, the mean score on self-efficacy was 28; self-esteem was 33, on a scale of 10–40. The score on self-efficacy was significantly lower and the score on self-esteem significantly higher than the norm scores of 31.14 and 31.6, respectively. In the experimental group, boys

Table I. Baseline information of the participants

Socio-demographic characteristics	Rock and Water group N = 260	Control group N = 261
Age M (SD)	15.2 (1.4)	15.0 (1.1)
<i>Classroom, %</i>		
Third class	63.7%	62.7%
Fourth class	36.3%	37.3%
<i>Level of VMBO education***</i>		
VMBO 1st level (vocational)***	26.3%	5.4%
VMBO 2nd level (framework)***	51%	32.3%
VMBO 3rd level (mixed)	8.9%	9.6%
VMBO 4th level (theoretical)***	13.9%	52.7%
<i>Ethnic background, %*</i>		
Dutch*	57.5%	69.9%
Moroccan or Turkish	12.0%	9.3%
Surinam or Antillean	6.2%	6.2%
Other Western nationality	10.4%	6.6%
Other non-Western nationality*	13.9%	8.1%
<i>Belief/Religion, %</i>		
None	53.7%	63.5%
Christian	22.4%	17.3%
Islamic	15.1%	11.9%
Remaining	8.9%	7.3%
<i>Importance of belief, %*</i>		
Not important*	53.7%	63.5%
Slightly important*	46.3%	36.5%
<i>Living situation, %</i>		
Living with both parents	67.1%	65.3%
Living with one parent	32.9%	34.7
Relationship with parents (scale 1–6), M (SD)	4.6 (1.2)	4.4 (1.2)
<i>Alcohol use</i>		
On weekdays, %	17.8%	23.5%
Number of glasses (n = 95/98), M (SD)	9.1 (12)	12.4 (16)
At weekends, %	38.6%	40%
Number of glasses (n = 95/98), M (SD)	14 (14.2)	18.4 (18.6)
<i>Sexual experiences</i>		
Experiences of sex (in general), %	44.2%	37.7%
Number of sex partners, M (SD)	4.3 (6.5)	4.4 (7.3)
Experiences of sexual intercourse, %*	32.3%	24.2%
Age at first time (n = 79/57), M (SD)	13.9 (1.2)	14 (1.4)

* $p < .05$, ** $p < .01$, *** $p < .001$.

reported a significantly more control over their sexual experiences than boys in the control group ($t = 2864$, $p = .004$). No other significant differences were found between groups.

Effects of Rock and Water

Sexual aggression. The descriptive statistics are presented in Table II. There was a significant reduction in reported coercive strategies in the experimental group, whereas the use of these strategies increased in the control group. This was particularly the case with verbal coercion ($OR = .49$). No significant reduction was found on the non-physical sexual aggression scale.

Table II. Descriptive statistics at T0, T1 and T2 for both the Rock and Water groups and control groups

	Rock and Water group (N = 260)	Control schools (N = 261)	Rock and Water group (N = 256)	Control schools (N = 261)	Rock and Water group (N = 229)	Control schools (N = 226)
Primary outcomes:	Pre-test	Pre-test	Post-test	Post-test	Follow-up	Follow-up
Sexual aggression						
<i>Pressure methods</i>	48.1%	41.7%	–	–	45,0%*	55,2%*
Verbal manipulation	47.3%	39.8%	–	–	45,0%*	54,7%*
Situation-bounded abuse	3.9%	6.9%	–	–	10,9%	23,8%
Sexual coercion	7.8%	9.7%	–	–	12,7%	24,2%
<i>Nonphysical sexual aggression</i>	49.4%	51.4%	–	–	52,4%	59,7%
Direct sexual aggression	47.1%	44.4%	–	–	46,9%	44,6%
Media-related sexual aggression	22.6%	25.5%	–	–	22,7%	25,4%
Secondary outcomes:	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
Cognitions and attitudes						
<i>(Sexual) Interaction competences</i>						
Control (1–5)	4.1 (0.7)	4.0 (0.8)	4.0 (0.9)	4.1 (0.8)	4.2 (0.8)	4.0 (1.0)
Assertiveness (1–5)	3.2 (1.2)	3.1 (1.1)	3.0 (1.3)	3.1 (1.1)	2.9 (1.3)	2.8 (1.3)
Self-regulation (1–5)	4.4 (0.6)	4.4 (0.7)	4.2 (0.9)	4.3 (0.8)	4.4 (0.8)*	4.1 (1.1)*
<i>Attitudes towards sexual pressure</i>	2.2 (0.8)	2.1 (0.9)	2.1 (1.0)	2.2 (0.9)	2.0 (1.0)	2.3 (1.1)
Self-efficacy (10–40)	28.7 (6.4)	28.0 (6.9)	28.7 (7.4)	27.6 (7.9)	28.3 (8.0)*	26.1 (8.9)*
Self-esteem (10–40)	33.0 (4.7)	33.2 (4.7)	32.3 (5.7)	33.0 (5.3)	32.7 (5.8)	31.7 (5.5)

* $p < .05$, ** $p < .01$

Cognitions and attitudes. There were no significant differences between the groups at follow-up assessment on the control and assertiveness scales of the (Sexual) Interaction Competences Scale. At follow-up, the boys in the experimental group reported a significant small improvement in self-regulation, whereas scores on self-regulation decreased in the control group ($\beta = .25, p < .05$). No significant differences were found in attitudes towards sexual pressure. In the experimental group, scores on self-efficacy were mostly stable, whereas scores in the control group decreased ($\beta = 2.76, p < .01$). However, in both the experimental and control groups mean scores did not exceed the norm score of 31.14. No significant differences between the groups in terms of self-esteem were found.

Discussion

Sexual behaviour of the boys

We found that 41% of the boys had experience with sex; the mean number of sex partners was 4.4 and 28.3% had experience with sexual intercourse at the mean age of 14 years. This is comparable with the study of De Graaf et al. (2005) in which it was shown that a greater percentage of poorly educated students had more different sex partners, four or more (41%), compared to higher educated adolescents (in the age group 12–24 years).

Problem behaviour of the boys

The results at baseline measurement show that, on the one hand, the boys used coercive strategies—especially verbal pressure—to obtain sex, and that they reported non-physical sexual aggression. On the other hand, their cognitions and attitudes with regard to sexuality and sexual behaviour were positive overall; they feel in control of their sexual experiences and do not approve of sexual pressure. Furthermore, they have a high self-esteem, but showed a low self-efficacy. These results indicate that there is a discrepancy between the outcome measures using sexual aggression and the cognitions and attitudes around relating to it.

Effects

The purpose of this study was to evaluate the effects of Rock and Water on sexual aggression, and on cognitions and attitudes. We found a significant reduction in reported coercive strategies, particularly in verbal pressure.

Furthermore, boys reported a significant improvement in self-regulation. However, at baseline measurement, the score was already high and it was a small increase, which cannot be considered relevant at a clinical level. At follow-up assessment, significant improvement in self-efficacy was found. However, because the scores at baseline, post-test and follow-up assessment were under the norm score, this is a non-relevant outcome at a clinical level. On all other scales, no significant effects were found. Similarly, no interaction effects were found. This suggests that Rock and Water is appropriate for boys of different ethnic backgrounds, and with different sexual experiences, sexual intercourse experiences and relationships with their parents.

Comparison with other programmes to prevent sexual aggression

As well as Rock and Water, several other programmes targeting the prevention of sexual aggression of adolescents are available in the Netherlands. Although most of them show positive change in knowledge and/or attitudes related to sexual aggression, few effectiveness

studies have been conducted (Foshee & Reyes, 2009; Taylor, Stein, Mumford, & Woods, 2013). Exceptions are Safe Dates and Shifting Boundaries which were evaluated in experimental designs. Safe Dates is implemented in the Netherlands under the title “Stay in Love”. Safe Dates is a school-based intervention for the prevention and reduction of dating violence among adolescents. The curriculum is a 10-session programme that targets attitudes and behaviours associated with dating abuse and violence (Foshee et al., 1998). Compared with controls, eighth and ninth grade adolescents taking part in Safe Dates reported significantly less physical, serious physical and sexual dating violence perpetration and victimisation one month and also four years after the programme ended (Foshee et al., 1998; Foshee et al., 2000).

Shifting Boundaries is a two-part intervention—classroom curricula and school-wide—designed to reduce dating violence and sexual harassment among middle school sixth and seventh grade students by highlighting the consequences of this behaviour for perpetrators and by increasing faculty surveillance of unsafe areas within the school (Taylor et al., 2011). The classroom curricula have six sessions that cover: (1) the construction of gender roles, (2) the setting and communicating of boundaries in interpersonal relationships, (3) healthy relationships, (4) the role of bystander as intervener, (5) the consequences of perpetrating and (6) the State and Federal laws related to dating violence and sexual harassment. The second component of Shifting Boundaries is a school-level intervention. This intervention aims to influence the entire school and consists of (1) revising school protocols for identifying and responding to dating violence and sexual harassment, (2) the introduction of temporary school-based restraining orders and (3) the installation of posters in the school to increase awareness and reporting of dating violence/harassment. The classroom curricula and the school-wide intervention are linked. The results of a randomised trial showed that behaviours improved as a result of the school-wide intervention and the combined classroom/school-wide intervention. However, the classroom curriculum, on its own, had no significant effect on any of the outcome measures (Taylor et al., 2013).

The most notable similarity between the programmes is the aim to reduce sexual aggression amongst adolescents. Furthermore, both Rock and Water and Shifting Boundaries have a classroom intervention as well as a school-level intervention. The programmes differ in some aspects. First, the age of the adolescents is different. Safe Dates targets students in the eighth and ninth grades, Shifting Boundaries is designed for middle school students in sixth and seventh grade and Rock and Water is designed for boys and girls in primary school and secondary school. In our study we targeted boys aged 14–16 years. Research suggests that adolescents can experience dating violence and sexual harassment as young as sixth grade (Callahan, Tolman, & Saunders 2003). In this study, we targeted young students. Second, both Shifting Boundaries and Rock and Water have a classroom curricula and school-wide intervention. The study of Taylor et al. (2013) showed that the school-wide intervention was effective. These results are encouraging in terms of effectiveness and little extra costs for schools. Third, although Safe Dates and Shifting Boundaries have some interactive physical elements in the classroom curriculum, Rock and Water is unique in the combination of psychological and physical teaching methods, with the focus on the physical exercises. Furthermore, Rock and Water is developed to be implemented in primary and secondary school. Finally, we cannot conclude that one programme is better than the other; further research is needed to investigate whether the physical exercises in Rock and Water are an effective addition to the curriculum.

Limitations

This study has several limitations that should be noted. First, the results are based on self-report measures. Questionnaires were completed only by the boys, and self-reports can be biased. Second, as is mentioned above, the implementation of the intervention was not optimal, for reasons including the inexperienced trainers, lack of a supportive environment in schools, shortened programme and incompleteness of or adaptations made to the lessons. These may have influenced the results. Third, this study's narrow focus on sexual aggression could have limited the effects of Rock and Water, which has a much broader aim. Fourth, the randomisation only partly succeeded. Although the design of this study comes close to a randomised controlled trial, this golden standard was not reached.

Implications for policy and practice

The study was conducted in a universal school setting. At baseline measurement, a high percentage of the boys reported using coercive strategies, especially verbal coercion and non-physical sexual aggression. In this study, Rock and Water was linked to a decrease in verbal manipulative coercive strategies, which suggests that it is a valuable universal intervention in schools. Conversely, the boys reported overall positive results on cognitions and attitudes at baseline measurement, which suggests that not much improvement was possible. In this aspect, Rock and Water may bring about more improvement in a more problematic group of boys, e.g. in a judicial or mental health care setting. Furthermore, the discrepancy between using coercive strategies and having positive cognitions and attitudes should be addressed by teachers or trainers. Boys should be made aware of the divergence between their coercive sexual behaviour and their intellectual ideas about sexuality and themselves. Finally, parental support and monitoring could be added to the Rock and Water intervention because these seem to be important protective factors.

Implications for further research

This study is the first controlled effectiveness study conducted worldwide on Rock and Water. It showed some significant results, but further research is necessary, preferably in randomised controlled trials. First, studies among boys *and* girls in a universal school setting with the focus on the main goals of Rock and Water are recommended. Additional studies in a primary school setting are also recommended. Moreover, studies in a judicial or mental health care setting, where more problem behaviour is present, are needed, and should include individually given interventions. Studies with longer follow-up times are also needed to investigate the long-term improvements with regard to the main objectives of Rock and Water. Additional research should also be undertaken to investigate Rock and Water when experienced teachers execute the intervention across entire schools. Finally, a study with alternate programmes is recommended, e.g. Safe Dates or Shifting Boundaries compared to Rock and Water.

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References

- Callahan, M. R., Tolman, R. M., & Saunders, D. G. (2003). Adolescent dating violence victimization and psychological well-being. *Journal of Adolescent Research, 18*, 664–681. doi:10.1177/0743558403254784
- De Graaf, H., Meijer, S., Poelman, J., & Vanwesenbeeck, I. (2005). *Seks onder je 25ste. Seksuele gezondheid van jongeren in Nederland anno 2005* [Sex under the age of 25. Sexual health of young people in the Netherlands, in 2005]. Delft: Eburon.
- De Haas, S. (2012). Seksueel grensoverschrijdend gedrag bij jongeren en volwassenen in Nederland [Sexual behavior among young people and adults in the Netherlands]. *Tijdschrift voor Seksuologie, 36*, 136–145.
- De Haas, S., Van Berlo, W., & Bakker, F. (2010). Jeugdige en volwassen plegers van seksueel geweld: een representatief onderzoek naar zelf gerapporteerde seksuele dwang [Juvenile and adult sex offenders: A representative study of self-reported sexual coercion]. *Tijdschrift voor Seksuologie, 34*, 218–223.
- De Haas, S., Van Berlo, W., Bakker, F., & Vanwesenbeeck, I. (2012). Prevalence and characteristics of sexual violence in the Netherlands, the risk of revictimization and pregnancy: Results from a national population survey. *Violence and Victims, 27*, 592–608. doi:10.1891/0886-6708.27.4.592
- Draijer, N. (1990). *Seksuele traumatisering in de jeugd: gevolgen op lange termijn van seksueel misbruik van meisjes door verwanten* [Sexual trauma in childhood. Long term effects of sexual abuse of girls by relatives]. Amsterdam: SUA.
- Fleuren, M. A. H., Wiefferink, C. H., & Paulussen, T. G. W. M. (2002). *Belemmerende en bevorderende factoren bij de implementatie van zorgvernieuwingen in organisaties* [Barriers and facilitators to implementing health innovations in organizations]. TNO Preventie en Gezondheid.
- Foshee, V., Bauman, K. E., Arriaga, X. B., Helms, R. W., Koch, G. G., & Linder, G. (1998). An evaluation of safe dates, an adolescent dating violence prevention programme. *American Journal of Public Health, 88*(1), 45–50. doi:10.2105/AJPH.88.1.45
- Foshee, V. A., Bauman, K. E., Greene, W. F., Koch, G. G., Linder, G., & MacDougall, J. E. (2000). The Safe Dates program: 1-year follow-up results. *American Journal of Public Health, 90*, 1619–1622. doi:10.2105/AJPH.90.10.1619
- Foshee, V. A., & Reyes, H. (2009). Primary prevention of adolescent dating abuse perpetration: When to begin, whom to target, and how to do it. In D. J. Whitaker & J. R. Lutzker (Eds.), *Preventing partner violence: Research and evidence-based intervention strategies* (pp. 141–168). Washington, DC: American Psychological Association.
- Höing, M., & Van Berlo, W. (2006). Seksuele dwang. In F. Bakker & I. Vanwesenbeeck (Red.), *Seksuele gezondheid in Nederland 2006* (pp. 157–166). Utrecht: Rutgers Nisso Groep.
- Koss, M. P., Abbey, A., Campbell, R., Cook, S., Norris, J., Testa, M., ... White, J. (2007). Revising the SES: A collaborative process to improve assessment of sexual aggression and victimization. *Psychology of Women Quarterly, 31*, 357–370. doi:10.1111/j.1471-6402.2007.00385.x
- Krahé, B. (1998). Sexual aggression among adolescents. *Psychology of Women Quarterly, 22*, 537–554.
- Kuyper, L., Wit, J. de, Adam, P., Woertman, L., & Van Berlo, W. (2010). *Laat je nu horen! Een onderzoek naar grensoverschrijdende seksuele ervaringen en gedragingen onder jongeren* [Let's hear it now! A research to sexual aggression experiences and behavior among young people]. Utrecht: Universiteit Utrecht/Rutgers Nisso Groep.
- Malamuth, N. M., Sockloskie, R. J., Koss, M. P., & Tanaka, J. S. (1991). Characteristics of aggressors against women: Testing a model using a national sample of college students. *Journal of Consulting and Clinical Psychology, 59*, 670–681. doi:10.1037/0022-006X.59.5.670
- Price, E. L., Byers, E. S., Belliveau, N., Bonner, R., Caron, B., Doiron, D., ... Moore, R. (1999). The attitudes towards dating violence scales: Development and initial validation. *Journal of Family Violence, 14*, 351–375. doi:10.1023/A:1022830114772
- Rosenberg, M. (1965). *Society and the adolescent self-image* (p. 326). Princeton, NJ: Princeton University Press.
- Schwarzer, R., & Jerusalem, M. (1995). Generalised self-efficacy scale. Measures in health psychology: A user's portfolio. *Causal and Control Beliefs, 1*, 35–37.
- StataCorp. 2013. *Stata statistical software: Release 13*. College Station, TX: StataCorp LP.
- Taylor, B. G., Stein, N. D., Mumford, E. A., & Woods, D. (2013). Shifting Boundaries: An experimental evaluation of a dating violence prevention programme in middle schools. *Prevention Science, 14*(1), 64–76. doi:10.1007/s11121-012-0293-2
- Taylor, B., Stein, N. D., Woods, D., & Mumford, E. (2011). *Shifting boundaries: Final report on an experimental evaluation of a youth dating violence prevention programme in New York City middle schools*. Washington, DC: National Institute of Justice.
- Van Berlo, W., & Mooren, T. (2009). Seksueel geweld: gevolgen en behandeling [Sexual violence: Effects and treatment]. In L. Gijs, W. Gianotten, I. Vanwesenbeeck, & Ph. Weijnenborg (Red.), *Seksuologie* (pp. 419–435). Houten: Bohn Stafleu Van Loghum.
- De Bruijn, P., Burrie, I., & Van Wel, F. (2006). A risky boundary: Unwanted sexual behaviour among youth. *Journal of Sexual Aggression, 12*(2), 81–96. doi:10.1080/13552600600841631
- Van Buuren, S. (2012). *Flexible imputation of missing data*. Boca Raton, FL: CRC Press.

- Vanwesenbeeck, I. (2008). Sexual violence and the MDGs. *International Journal of Sexual Health*, 20(1–2), 25–49. doi:10.1080/19317610802157028
- Vanwesenbeeck, W. M. A., Bekker, M. H. J., & Lenning, A. V. (1999). Vrouwen en mannen in heteroseksuele interactie; een onderzoek onder Nederlandse studenten [Women and men in heterosexual interaction; a study among Dutch students]. *Tijdschrift voor Seksuologie*, 23, 8–16.
- Wensing, M., Van Splunteren, P., Hulscher, M., & Grol, R. (2000). *Praktisch nieuw; implementatie van vernieuwingen in de gezondheidszorg* [Practically new: Implementation of innovations in health care]. Assen: Van Gorcum en Comp. B.V.
- Ykema, F. (2002a). *Het Rots en Water perspectief. Een psychofysieke training voor jongens*. Basisboek [The Rock and Water perspective. A psychophysical training for boys. Basic book]. Amsterdam: Uitgeverij SWP.
- Ykema, F. (2002b). *Rots en Water. Een psychofysieke training voor jongens*. [Rock and Water. A psychophysical training for boys] Praktijkboek. Amsterdam: Uitgeverij SWP.
- Ykema, F., Hartman, D., & Imms, W. (2006). *Bringing it together. Includes 22 case studies of Rock & Water in practice in various settings*. Callaghan: University of Newcastle, Family Action Centre and Gadaku Institute.
- Ykema, F. (2003). *Rock and Water: Skills for physical-social teaching with boys. Starter manual*. Perth: Gaduka Institute.