

Research report

Testing sex-specific pathways from peer victimization to anxiety and depression in early adolescents through a randomized intervention trial

Patricia Vuijk^{a,*}, Pol A.C. van Lier^b, Alfons A.M. Crijnen^a, Anja C. Huizink^a

^a Department of Child and Adolescent Psychiatry, Erasmus MC-Sophia, Rotterdam, The Netherlands

^b Department of Developmental Psychology, Vrije Universiteit, Amsterdam, The Netherlands

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Abstract

The aim of this study was to test for sex differences in the role of physical and relational victimization in anxiety and depression development through a randomized prevention trial. 448 seven-year-old boys and girls were randomly assigned to the Good Behavior Game intervention, a two-year universal classroom based intervention aimed at reducing disruptive behavior problems and creating a safe and predictable classroom environment, or to a control condition. Assessments of self-reported physical and relational victimization at age 10 years, and self-reported major depressive disorder, generalized anxiety, social anxiety, and panic/agoraphobia symptoms at age 13 years were available. Reductions in anxiety/depression were mediated by reduced rates of relational victimization in girls, whereas reductions in physical victimization accounted for the reduced anxiety/depression scores among boys. The results support sex-specific pathways of victimization leading to anxiety and depression.

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1. Introduction

Prevalence rates of clinically elevated levels of anxiety and depression in children and early adolescents range from 2% to 4% (Costello et al., 2003; Ford et al., 2003). Anxiety or depression in early adolescence confers a strong risk for anxiety and depressive disorders during adulthood (Bittner et al., 2004; Pine

et al., 1998; Woodward and Fergusson, 2001), and has been associated with suicide attempts, completed suicide (e.g., Apter and Wasserman, 2003), and illicit drug dependence (Woodward and Fergusson, 2001).

Victimization by peers has been hypothesized to cause symptoms of anxiety and depression (for a review, see Hawker and Boulton, 2000). Victimization experiences may result in negative self-evaluations and low self-efficacy in achieving social goals, leading to anxiety and depression (Prinstein et al., 2005; Troop-Gordon and Ladd, 2005). In studying the link between victimization and internalizing outcomes, it should be noted that different forms of victimization exist. In addition to physical victimization (i.e., being

* Corresponding author. Department of Child and Adolescent Psychiatry, Erasmus MC-Sophia, P.O. Box 2060, 3000 CB Rotterdam, The Netherlands. Tel.: +31 10 463 6096; fax: +31 10 463 6803.

E-mail address: p.vuijk@erasmusmc.nl (P. Vuijk).

the victim of physically aggressive acts or threats), children can also be relationally victimized (i.e., being the target of peers' attempts to harm or control their relationship with others, for instance through hostile rumor, or being excluded from activities with peers; Crick et al., 2001).

The child's gender may be the key variable in both the exposure to forms of victimization and its link with anxiety and depression. Indeed, boys may experience more physical victimization, whereas girls may experience relational victimization (e.g., Crick and Bigbee, 1998; Cullerton-Sen and Crick, 2005; Schäfer et al., 2002), although such results are not unequivocal (see Nishina et al. 2005; Storch et al., 2005). Moreover, girls' pathways to internalizing problems have been related to relational victimization, (Crick et al., 2002a,b; Storch et al., 2003; Sullivan et al., 2006), whereas boys' pathways have been linked to physical victimization (Prinstein et al., 2001). However, again, these findings are not unequivocal, as no sex differences in the link between forms of victimization and internalizing outcomes have also been reported (e.g., La Greca and Harrison, 2005; Prinstein et al., 2001; Storch et al., 2003; Storch et al., 2002).

Randomized controlled trials (RCTs) may be very effective in studying the link between victimization and internalizing outcomes. This because RCTs provide the opportunity to test whether the reduction in the manifestation of the risk variable, due to a controlled influence – the intervention – mediates the distal impact of the program on reductions in the outcome variable (see also Coie et al., 1993; Kellam and Rebok, 1992; Kraemer et al., 2001; Rutter et al., 2001), while the randomization controls for possible sources of confounding. In the present study, we aimed to test whether reductions in physical and relational victimization at age 10, due to the Good Behavior Game intervention (GBG, Barrish et al., 1969; Dolan et al., 1989), mediated the reductions in anxiety and depression at age 13 years. The GBG aims to create a safe and predictable classroom environment by promoting prosocial behavior and reducing aggressive and disruptive behavior. Indeed, the GBG demonstrated to reduce aggressive, oppositional, inattentive, and antisocial behavior (Ialongo et al., 2001; Ialongo et al., 1999; Reid et al., 1999; van Lier et al., 2004; van Lier et al., 2005). Given these reductions we hypothesized to find reduced rates of physical victimization due to the intervention. Moreover, because the GBG facilitates positive interactions between children, we hypothesized to find reductions in relational victimization.

2. Method

2.1. Participants

Thirteen elementary schools in Rotterdam and Amsterdam, the Netherlands, were recruited in 1999. In these schools, 744 children were eligible for inclusion, of which for 677 (51% male) informed consent by parents or parent substitutes was obtained (90% participation rate). The mean age of these children was 6.9 years (SD=0.6) at baseline (for more details about the sample, see van Lier et al., 2004).

Assessments of victimization at age 10 years and ratings of anxiety and depression symptoms at age 13 years were available for 448 children. Loss to follow-up was not related to the child's gender, nor to intervention condition (GBG/control), but was related to being of non-Caucasian ethnicity (χ^2 (1, $N=677$)=4.25, $p<0.05$), and of low socio-economic status (χ^2 (1, $N=624$)=23.79, $p<0.01$).

2.2. Measures

2.2.1. Age 7 pre-intervention measures

Teacher-reported symptoms of anxiety and depression were assessed through the Anxious/Depressed scale of the Teacher's Report Form (TRF/6–18; Achenbach, 1991a). Teachers rate the child's behavior on a three-point scale (0=not true, 1=somewhat or sometimes true, 2=very true or often true). Cronbach's alpha was 0.83.

Parent-reported social problems were assessed through the Social Problems scale of the Child Behavior Checklist (CBCL/4–18; Achenbach, 1991b). Parents rate their child's behavior on a three-point scale (0=not true, 1=somewhat or sometimes true, 2=very true or often true). Cronbach's alpha was 0.59.

Intervention status (0=control, 1=GBG) and *Child's gender* (0=male, 1=female) were included as predictor variables.

2.2.2. Age 10 distal intervention change measures

Children's self-reports of physical and relational victimization were obtained with the Social Experience Questionnaire–Self-Report Form (SEQ-S; Crick and Grotpeter, 1996). Items are rated on a 5-point Likert scale with 0=never true, 1=seldom true, 2=sometimes true, 3=very often true, 4=almost often true. Cronbach's alpha was 0.72 for physical victimization and 0.60 for relational victimization.

2.2.3. Age 13 outcome variables

Children's self-reports of anxiety and depression were obtained with the Revised Child Anxiety and Depression

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