

# Effects of the Good Behavior Game on the Behavioral, Emotional, and Social Problems of Children With Psychiatric Disorders in Special Education Settings

Journal of Positive Behavior Interventions  
1–12

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DOI: 10.1177/1098300715593466

jpbi.sagepub.com



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## Abstract

Teaching children with psychiatric disorders can be a challenging task. The purpose of this study was to examine the impact of the Good Behavior Game (GBG) in children with psychiatric disorders, and their teachers, in special education. Teachers were trained by licensed school consultants to implement positive behavior support strategies to elicit desired behavior in students. A total of 389 children and their 58 teachers at 11 schools for special primary education were included in the study. Using a cluster randomized controlled design, special education schools were assigned to an intervention condition or an education as usual condition. An increase in emotional and behavioral problems was found in the control group, whereas no change was seen in the intervention group, indicating a modest intervention effect. No effects were found on children's relationships with teachers or peers. The GBG affected teachers' sense of self-efficacy in engaging students in schoolwork, but no effects were found on teachers' self-efficacy in classroom management or on teachers' burnout symptoms. Thus, although children with psychiatric disorders and their teachers in special education can benefit from the GBG, given the partial effects and modest effect sizes, a longer duration program complemented with additional elements is recommended.

## Keywords

special education, classroom intervention(s), for children with or at risk for EBD, in children, disorders, behavior(s), autism

Many children with psychiatric disorders such as autism spectrum disorder (ASD), attention deficit/hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), and conduct disorder (CD) have high levels of social, emotional, and behavioral problems and subsequent special educational needs. Some of these children are in need of extensive and pervasive support that, in the Netherlands, is given in schools that provide education to students with special needs only. In addition to individual psychiatric treatment, such care could involve facilitating positive child–teacher interactions to enhance child development. A behavioral program aimed at creating a positive classroom environment is the Good Behavior Game (GBG; Barrish, Saunders, & Wolf, 1969). The GBG provides teachers with strategies to manage their class, such as the application of positive classroom rules describing the desired student behavior that will elicit appropriate behavior in children working within teams. However, some GBG elements may

be less desirable such as the element of classroom competition that can lead to undue peer pressure (Wright & McCurdy, 2012). Students may harass team members who do not exhibit the required behaviors (Tingstrom, 2006), or students of the winning team may harass students in the “losing” team with statements such as “My team beat yours

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**Action Editor:** Lee Kern

again today” (Harris & Sherman, 1973). These elements of the GBG were adapted for use in the Netherlands to emphasize a more positive approach (Nolan, Houlihan, Wanzek, & Jenson, 2014; Van der Sar & Goudswaard, 2001). In general, the adapted GBG intervention provides teachers with strategies to reinforce desired behavior in children by systematically praising their appropriate behavior and paying minimal attention to their disruptive behavior. Importantly, both the original and adapted version of the GBG have been found effective in reducing children’s behavioral problems in general primary education (Dolan et al., 1993; Leflot, Van Lier, Onghena, & Colpin, 2010; Petras et al., 2008; Van Lier, Muthén, Van der Sar, & Crijnen, 2004).

The basic principles of the adapted GBG are in line with positive behavior support strategies such as the use of a token economy system and positive reinforcement to cause behavior change. These strategies may be especially advantageous for children with serious emotional and behavioral problems in complex naturalistic settings such as special education (Kohls, Herpertz-Dahlmann, & Konrad, 2009; Sutherland, Lewis-Palmer, Stichter, & Morgan, 2008). To our knowledge, no earlier study has examined the effects of the GBG on children with psychiatric disorders in special education; however, the GBG intervention did positively affect children with the highest levels of behavioral problems in general education (Kellam, Rebok, Ialongo, & Mayer, 1994; Van Lier, Vuijk, & Crijnen, 2005). Also, Petras et al. (2008) found that the children who received the GBG intervention in childhood had lower incidences of antisocial personality disorder in adulthood compared with controls.

In addition to reducing children’s emotional and behavioral problems, the GBG may improve the social relations they have with teachers and peers. Because teachers focus on praising and rewarding students who show desired behavior, their relationships with their students may improve as supportive behaviors are related to greater perceived closeness between teacher and students (Buyse, Verschueren, Doumen, Van Damme, & Maes, 2008; Mainhard, Brekelmans, & Wubbels, 2011). In addition, during the GBG, children work in teams and share responsibility in maintaining a positive classroom environment. Because children learn to help and praise each other for showing desired behavior, peer acceptance may increase (Witvliet, Van Lier, Cuijpers, & Koot, 2009). Positive social experiences may be particularly important for students with significant emotional and behavioral problems (Buyse et al., 2008). This study therefore also focuses on the impact of the GBG on relations with teachers and peers.

Although the GBG is primarily directed at improving the classroom environment for children, it is also important to gain insight into whether teachers benefit as teaching in special education can be challenging. Children with psychiatric disorders often show classroom behavior that disrupts

the educational process, such as out-of-seat behavior, verbal disruption, and aggression (Albrecht, Johns, Mounstevan, & Olorunda, 2009; Greene, Beszterczey, Katzenstein, Park, & Goring, 2002). Teachers report significantly higher stress levels in their interactions with children diagnosed with ADHD than without ADHD, especially when additional oppositional behavior is present (Greene et al., 2002). This is of concern as chronic exposure to job-related stressors may result in discrepancies in teachers’ observed and ideal self-efficacy (Friedman, 2000), and self-efficacy represents an important dimension of burnout (Maslach, Schaufeli, & Leiter, 2001). In addition, some have argued that the association between problem behavior and teacher well-being is mediated by the teacher–child relationship. That is, behavioral problems undermine the teacher–child relationship, which may cause prolonged distress in teachers (Spilt, Koomen, & Thijs, 2011). However, when teachers’ actions improve their students’ behavior, social relationships and teachers’ self-efficacy are likely to improve, and burnout symptoms are likely to diminish. The GBG teacher training focuses on positive behavioral change in children and improvement in teacher–child relationships, and may therefore also affect teachers’ well-being, an assumption that we will examine in this study.

Taken together, the goal of this study was to examine the impact of the GBG on children with psychiatric disorders, primarily children with ADHD and ASD, and their teachers in primary (i.e., Grade 1–6) special education schools in the Netherlands. We had three research questions. First, does the GBG reduce children’s level of emotional and behavioral problems? Second, does the GBG improve teacher–child and peer relationships? Third, does the GBG improve teachers’ sense of self-efficacy and reduce their level of burnout symptoms? At the end of the school year, we expected (a) children in the intervention group to have lower levels of emotional and behavioral problems than children in the control group, (b) teachers in the intervention group to experience a closer teacher–child relationship than teachers in the control group and children in the intervention group to experience a closer teacher–child relationship and to have better peer relations than children in the control group, and (c) teachers in the intervention group to experience an increased sense of self-efficacy and fewer burnout symptoms than teachers in the control group.

## **Method**

### **Overview**

The study was approved by the Dutch Medical Ethics Committee for Mental Health Care (METiGG). To study intervention effects over the course of one school year, we compared children and teachers in special education using the GBG intervention with children who received special

education as usual as their teachers did not perform a specific classroom intervention. Children with psychiatric disorders attended special primary education schools located throughout the Netherlands. Reasons for referral to the school by teachers and parents were the presence of extensive social, emotional, and behavioral problems, both at home and in school, as assessed by mental health services (Ministerie van Onderwijs, Cultuur en Wetenschap, 2003). Approximately one third of the Dutch children who fulfill the criteria for a psychiatric disorder and severe behavioral problems that limit their participation in education can continue to attend general education with extra classroom support, with the remaining two thirds being placed in schools for special education (Inspectie van het onderwijs, 2010). The class size in these special educational schools is smaller than in general education, and teachers receive additional training and resources such as the availability of paraprofessionals and school psychologists (Meijer, 2003). We invited special education schools within acceptable driving distance (maximum 75 min) from the Center for Educational Services (CED-groep) that supplied the GBG-licensed school consultants. Schools that were first to respond positively to the invitation were included in the study until we reached a minimum of 500 children eligible for inclusion. Because there is regular communication between the school psychologist and teachers regarding behavior management practices in schools for special education, we chose to randomly assign schools rather than classrooms to either the control or intervention group, to minimize the possibility of contamination of intervention effects between classrooms and teachers.

### Participants

Eleven schools for special primary education for children with psychiatric disorders participated in this study. A cluster randomized controlled design was used to evaluate the GBG intervention. Schools were the clusters of randomization and were included in one of two ways. First, in 2009, 5 schools had departments for both primary and secondary education, and these secondary education classes were already participating in a GBG study. In this ongoing GBG project among secondary school children, schools had been matched based on school size and profile, and then randomly assigned to the control or intervention condition within a larger pool of secondary schools. School profile was determined in consultation with school management and based on primarily providing education to children with ASD or to children with ADHD and behavioral disorders. The younger children attending primary education in these schools were included in the current study in 2010 and assigned to the same condition as the secondary education classes. Second, in 2010, 6 schools that only provided special primary education were randomly assigned by the

research team to either the intervention or control condition, after school management declared their intention to participate. These procedures resulted in 5 schools (23 classes) in the control group and 6 schools (34 classes) in the intervention group.

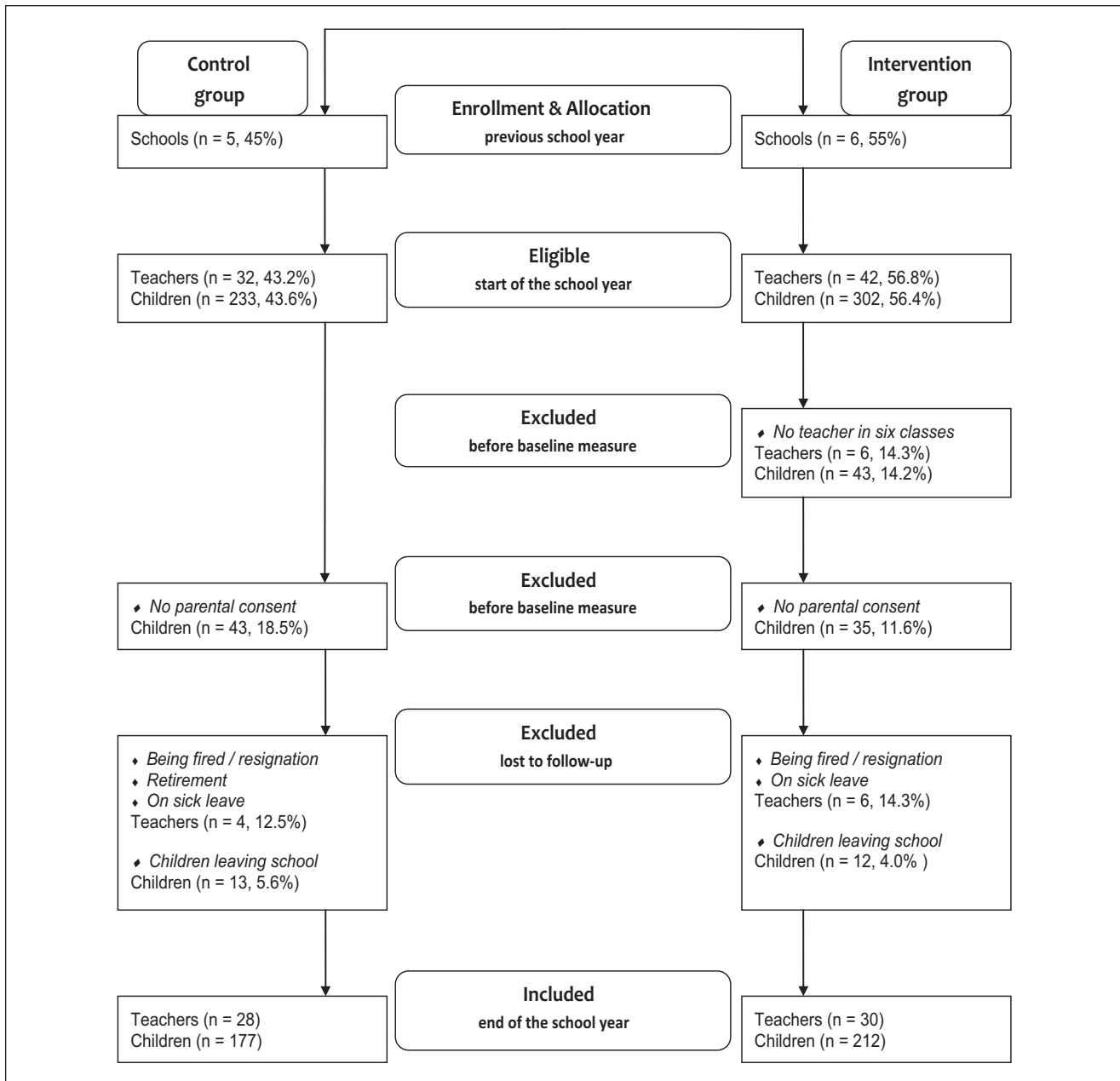
The randomization procedure was finished by the end of the previous school year. During the beginning of the new school year, it was decided that 6 eligible classes were not able to participate in the study due to problems present in these classes such as teacher resignation or burnout. Therefore, our final study sample comprised 23 classes in the control group and 28 classes in the intervention group.

All children and teachers in Grades 1 to 6 (i.e., primary education classes excluding kindergarten and secondary education) were eligible for inclusion. Figure 1 shows the flowchart of schools', teachers', and children's participation. After exclusion of the six non-participating classes, the target population consisted of 492 children and 68 teachers. For 84% of the children ( $n = 414$ ), written informed parental consent was obtained for their participation in the study. These children (87% boys) had a mean age of 10.08 years (range = 5–13 years) and a mean IQ of 88 (range = 56–143). Forty-eight percent of the children had two or more psychiatric disorders. Most prevalent disorders in this population were ASD (44.5%), ADHD (38.8%), and ODD/CD (28.0%). During the school year, 25 children dropped out of the study because they were transferred to other schools resulting in a final sample of 389 children. Children lost to follow-up did not differ from participating children with regard to most child characteristics (age:  $p = .41$ ; IQ:  $p = .82$ ) or baseline assessments (behavioral problems:  $p = .09$ ; emotional problems:  $p = .39$ ; teacher–child closeness:  $p = .15$ ; social preference:  $p = .39$ ). However, children not lost to follow-up were more often diagnosed with ASD ( $p = .01$ ).

Of the 68 teachers present at baseline, 10 dropped out during the study. These teachers were replaced by new teachers who did not report on teacher outcomes but only on child outcomes, resulting in teacher outcome data being available for 58 teachers. Of these teachers, 72% were female and their mean age was 38.81 years (range = 24–61 years). Teachers had on average 14.01 years of experience in teaching, and almost all teachers (95%) had obtained a bachelor's degree. This degree allows them to teach in general and special education. Training for special education is limited, but teachers are generally supported by psychologists with a master's degree. Study dropout was not related to study condition ( $p = .63$ ), age ( $p = .37$ ), or sex ( $p = .06$ ).

### Measures

**Overview.** Data for the baseline assessment were collected in fall, before the start of the intervention (approximately 6 weeks after the start of the school year) and at the end of the school year during spring (approximately 9 months after the



**Figure 1.** Flowchart of participating children and teachers.

start of the intervention). Children and teachers completed questionnaires individually in their classes. Given their young age and still developing literacy and writing skills, children from Grade 1 did not provide self-report data. If a child in Grade 2 or higher needed help, research assistants conducted a face-to-face interview with the child.

**Measurement of intervention effects.** Teacher ratings of children's behavioral and emotional problems were collected using the *Problem Behavior at School Interview* (PBSI; Erasmus Medical Center, 2000). The PBSI is a

43-item questionnaire in which children's emotional and behavioral problems are rated on a 5-point scale ranging from 1 (*never*) to 5 (*very often*). The *Behavioral Problems scale* was composed of three subscales (ADHD: 8 items, ODD: 7 items, CD: 12 items; range of correlations between the subscales = .62–.80; range of Cronbach's  $\alpha$  for both assessment waves = .95–.96; example item, "This child disobeys teachers' instructions"). The *Emotional Problems scale* was composed of two subscales (Anxiety: 5 items; Depression: 7 items; correlation between the two subscales = .65; Cronbach's  $\alpha$  = .87; example item, "This child is nervous or



tense”). In previous GBG studies, the PBSI has been found sensitive in measuring intervention effects (Van Lier et al., 2004; Witvliet et al., 2009).

Teacher reports of the teacher–child relationship for all individual children in class were collected using the Closeness dimension (11 items, Cronbach’s  $\alpha = .88-.90$ ) of the Dutch version of the *Student–Teacher Relationship Scale* (STRS; Koomen, Verschueren, & Pianta, 2007). Teachers rated items such as “I share an affectionate, warm relationship with this child,” on a 5-point scale ranging from 1 (*definitely does not apply*) to 5 (*definitely applies*). Construct validity and convergent validity of the Closeness scale with child and peer reports of the same construct have been established (Doumen et al., 2009; Koomen et al., 2007).

Children’s social preference was evaluated by means of peer nominations with a procedure developed by Coie and Dodge (1988). Social preference was assessed using two questions: “Which children in your classroom do you like most?” and “Which children in your classroom do you like least?” An unlimited number of children could be nominated. To create social preference scores, first, each child’s number of liked most (LM) and liked least (LL) nominations were divided by the number of participating children in class minus one (self-nominations were not allowed), to account for variability in classroom size. Next, children’s social preference scores were constructed by subtracting the LL from the LM score. Then, to achieve percentages of each child’s social preference, scores were multiplied by 100. Peer nominations are considered a valid way of assessing children’s social preference because the children themselves, rather than parents or teachers, are asked to evaluate the likeability of their classmates (Diamantopoulou, Henricsson, & Rydell, 2005).

Teachers’ sense of self-efficacy was assessed with the Student Engagement and Classroom Management subscales of the short version of the *Teachers’ Sense of Efficacy Scale* (TSES; Tschannen-Moran & Hoy, 2001). Student Engagement was assessed through three items including “How much can you do to motivate students who show low interest in school work?” (Cronbach’s  $\alpha = .77-.81$ ). This subscale originally consisted of four items, but reliability analyses showed that one item was not related to the other items (“How much can you assist families in helping their child do well in school?”). Classroom Management was assessed with four items including, “How much can you do to get children to follow classroom rules” (Cronbach’s  $\alpha = .78$ ). Teachers rated the items on a 9-point scale ranging from 1 (*nothing*) to 9 (*a great deal*). Positive correlations with other measures of self-efficacy in general and self-efficacy in teaching provide evidence for the convergent validity of the TSES (Tschannen-Moran & Hoy, 2001).

Teachers’ level of burnout symptoms was assessed using two subscales from the Dutch adaptation of the *Maslach*

*Burnout Inventory*, the *Utrechtse Burn-Out Schaal for teachers* (UBOS-L; Schaufeli & Van Dierendonck, 2000). The subscale Emotional Exhaustion has eight items (e.g., “I feel emotionally drained from my work”); Cronbach’s  $\alpha = .87-.92$ , and Personal Competence has seven items (e.g., “I feel I’m positively influencing other people’s lives through my work”); Cronbach’s  $\alpha = .80-.81$ ). Teachers rated the items on a 7-point scale, ranging from 0 (*never*) to 6 (*every day*). Validity of the UBOS-L has been established by showing that the questionnaire predicts teachers’ sick leave due to work-related psychological symptoms (Schaufeli & Van Dierendonck, 2000).

Children’s perspective on teacher–child closeness was assessed using the Affiliation dimension (32 items, Cronbach’s  $\alpha = .87-.91$ ) of the *Questionnaire on Teacher Interaction* (QTI; Wubbels & Levy, 1991). Children responded to statements such as, “This teacher is friendly” using a 4-point scale, ranging from 1 (*never*) to 4 (*always*). All scores of children in a class were aggregated to the teacher level to create an estimate of teacher’s general closeness. The QTI meets the standards of the American Evaluation Association for accuracy, reliability, and validity (Wubbels & Brekelmans, 2005).

Demographic variables were assessed for inclusion in the analyses as possible confounders. For children, these were sex, age, IQ, diagnosis, and receiving treatment or medication for their psychiatric disorder. As the GBG is a classroom-based intervention with many social elements, such as the systematic use of praise and children working together in teams, we specifically added ASD as a covariate in our analyses (diagnosis: 0 = ASD, 1 = not ASD). Children’s sex (0 = boy, 1 = girl), age, IQ, and diagnosis were taken from their school medical files. Receiving treatment or medication (0 = no, 1 = yes) was assessed using parent questionnaires. Data on teachers’ sex (0 = male, 1 = female) and age were provided by the teacher. Study condition was dummy coded (0 = control, 1 = intervention).

**Measurement of protocol adherence.** Treatment integrity was assessed by five different criteria: (a) the number of training sessions teachers attended (maximum 3), (b) the number of teachers’ coaching sessions received (maximum 10), (c) the number of times the GBG was played (the teacher’s objective was to play 60 times or more within one school year), (d) reaching the expansion and generalization phase of the GBG, and (e) adherence to important GBG principles and teaching skills in each phase as assessed during monthly observations and at the end of the school year (Supplemental Table S1).

Signatures were used to keep track of the number of training and coaching sessions teachers attended. Information on GBG playtime was gathered systematically by teachers. Every time the GBG was played, teachers noted down the date, the students present, chosen rules, and duration of GBG playtime on GBG forms. Every month,

these forms were given back to the consultant who discussed the results with the teacher and made copies for the research team for processing purposes. Finally, implementation of GBG principles and teaching skills was observed and judged by the consultants to monitor teachers' progress during the monthly coaching sessions. During these observations, consultants rated whether the teacher showed the expected behavior (yes/no) on a list of all GBG principles. The three core GBG principles (Van der Sar & Goudswaard, 2001) were (a) structuring the classroom environment (i.e., describing the teaching activity such as class instruction or working independently, discussing the positively formulated classroom rules, displaying pictures depicting these rules, discussing the rewards with the students), (b) reinforcing desired student behavior (i.e., praising individual students showing desired behavior, praising teams showing desired behavior, handing out rewards), and (c) facilitating the extinction of undesired behavior (i.e., consistently taking a card when a student showed rule-breaking behavior, further ignoring rule-breaking or disruptive behavior). Likewise, at the end of the school year (i.e., after 10 months of GBG implementation), the school consultants rated whether each teacher in general showed the expected GBG principles and teaching skills (yes/no).

### *Intervention*

The GBG was implemented in the intervention schools during the 2010–2011 school year by 10 GBG-licensed school consultants. Responsibility for correct implementation was shared among consultants, teachers, school management, and the research team. All school consultants were employed at the Centre for Educational Services where they had received their GBG training. With the exception of one consultant, no one was familiar with their assigned schools before the start of the study.

GBG implementation was started by teachers receiving the first of three group-training sessions. Training sessions lasted approximately 2 hr during which teachers learned to apply the core principles of the program. During the first training session, the consultant explained the principles of the GBG, gave information on the theoretical background of the GBG, including information about reinforcement and operant conditioning, and described the practical steps to start with the GBG in the classroom. During the second training session, teachers evaluated their experiences with the GBG and were prompted to ask questions and discuss difficulties. In addition, the consultant explained the practical steps to continue to the second phase. The third training session again involved discussing questions and difficulties and the practical steps to continue to the generalization phase. In addition, teachers received background information on positive classroom climate and how to generalize the effects achieved with the GBG to other learning situations.

Before the start of the intervention, teachers observed and tallied the amount of each child's disruptive behavior (e.g., speaking out of turn, screaming, disturbing other children, touching other children's property). With this information, children were assigned to teams that included students with both high and low levels of disruptive behavior. This way, teams within a class were approximately equivalent in that respect.

After these preparations, teachers implemented the first phase of the GBG, introduction. In this phase, the GBG was played 3 times a week for approximately 5 to 10 min. Teachers chose when to conduct the GBG, but in the introduction phase, this was always during instruction time. Each team received a number of cards, and classroom rules were discussed. As one of the adapted GBG goals is for children to experience success, the number of cards each team received varied. In consultation with the consultants, teachers chose the number of cards so that the right balance was created between positively challenging children and ensuring that every team could receive the reward. In addition, teachers discussed desired behavior. Each time the GBG was played, teachers chose and discussed three rules that best suited the desired behavior for a specific teaching task. The GBG game box contains eight exemplary pictograms depicting eight positive classroom rules that were made visible by attaching the chosen rules to the blackboard. Examples of rules were as follows: "Raise your hand if you want to ask a question" and "Ask if you want to borrow something" (Van der Sar & Goudswaard, 2001). The rewards for abiding by the rules were also discussed, yet the teacher made the final decision in selecting the appropriate award; thus, awards differed between classes. Each group of students had a calendar on which they could track their progress, indicating the times they succeeded winning the game and thus how many times they received the daily, weekly, and monthly reward. A group received the daily reward when they still had cards left when GBG playtime ended, the weekly reward when they succeeded all 3 times the GBG was played that week, and the monthly reward when they succeeded at the GBG the number of times previously agreed upon in that month. Teams had to abide by the predefined rules to keep their cards. If a child violated one of the rules, the teacher removed one of the team's cards. Meanwhile, the teacher encouraged on-task behavior by praising teams and individual children who followed the rules. If at least one card remained after GBG time was over, teams and children were rewarded with small material rewards (e.g., stickers) and/or activity rewards (e.g., computer time, extra free time).

When the consultant assessed that the teacher successfully implemented the core GBG components in each phase (e.g., discussing classroom rules, stating the reward, praising children) and the teacher indicated feeling ready to move on to the next phase, they advised them to do so. In

the second phase, expansion, teachers were encouraged to expand the duration of the GBG and implement the GBG in settings other than during instruction time, and rewards were delayed until the end of the week. In the third phase, generalization, playtime gradually increased up to 180 min a week (i.e., 1 hr a day), and rewards generally became more group-oriented (e.g., class outings). In this phase, teachers continued to play the GBG 3 times a week following the same guidelines as before. In addition, teachers practiced their supportive behavior outside the GBG setting and promoted desired behavior in children by explaining that the rules used during the GBG are also applicable when the game is not in process. Although teachers varied in mastering the GBG teaching skills in each phase, the introduction and expansion phases lasted approximately 4 months and the generalization phase the remainder of the school year. During the implementation of the GBG, the school consultant individually coached the teachers in conducting the GBG during 10 monthly sessions that lasted for about 1 hr. The main goal of these sessions was to ensure proper implementation of core GBG principles. In these sessions, consultants observed teachers during regular teaching time and during their execution of the GBG to provide them with feedback on their teaching skills and implementation of GBG principles.

The GBG has been adapted to fit the Dutch school system. There were two main differences between the original and adapted intervention. First, in the original GBG, the teacher assigns points when children show disruptive behavior, which basically puts the main focus on undesired behavior, especially when the teacher publicly puts a mark by the name of the team on the chalkboard (Nolan et al., 2014; Tankersley, 1995). The response cost element in the adapted GBG is the removal of a card from a team contingent on rule-breaking or disruptive behavior. However, the teacher is specifically trained to pay minimal attention to this behavior. The teacher quietly and with “a neutral face” takes one of the cards and then praises other children who abide by the classroom rule that was just violated. The teacher thereby publicly emphasizes and clarifies what behavior is desired. Second, to avoid undue peer pressure, children are encouraged to actively support each other in showing desired behavior, and Dutch teachers do not appoint weekly winners so that there is no competition between children. Instead, as the game should be a successful experience for everybody, all children win the game if their team has at least one card left.

In addition, special education teachers were allowed to make minor alterations to the GBG game play (Nederkoorn, 2009). For example, if the teacher or school consultant deemed it necessary, fewer than three rules were formulated, and the GBG was played for a shorter time period. As intervention classes consisted of approximately nine children, teams were smaller than in general education. The

mean number of teams in each class was 3.76 ( $SD = 0.95$ ), and team composition generally varied between 1 and 4 children. Children were grouped together in seating arrangements; however, some children with very severe social or behavioral problems were seated separately from their team to avoid too much distraction. To prevent disruptive behavior occurring when a card was lost, cards were sometimes put at the front of the classroom rather than on the children’s tables. Finally, in the expansion phase, rewards could be distributed immediately after playing the game instead of being postponed.

### Data Analysis

All analyses were performed using Mplus Version 6.12 (Muthén & Muthén, 1998–2010). To evaluate baseline differences in study condition, demographic and outcome variables at baseline ( $T_0$ ) were regressed on study condition. To assess intervention impact on the outcome variables at follow-up, follow-up scores ( $T_1$ ) were regressed on their baseline scores ( $T_0$ ), study condition, and demographic covariates. Only the demographic covariates that differed significantly between the two groups at baseline, or were significantly related to the outcome variables at follow-up ( $T_1$ ), were selected for inclusion in the regression analyses of intervention impact. By virtue of these two analyses, for children, sex, age, IQ, and diagnosis were included as covariates in the analyses, whereas treatment and medication were excluded. For teachers, age and sex were included as covariates in the analyses.

We used maximum likelihood estimation with robust standard errors (MLR) as the estimator in our analyses because it is robust to non-normality when used with the complex feature of Mplus and allows for the analysis of missing data by full information maximum likelihood (FIML). There were no missing data for either assessment wave for the TSES and UBOS-L. Missing data ranged from 1% to 2% on the STRS, 1% on the PBSI, and 5% on social preference. For the QTI, between 24% and 28% of the data were missing, mostly by design, as only children from Grade 2 or higher filled in questionnaires, and children rated only their main teacher who taught the children most days of the week. The FIML approach uses all of the available information in the data to produce robust parameter estimates for the missing data (Muthén & Muthén, 1998–2010). The regression analyses also accounted for the hierarchical structure of the data, that is, the potential dependence among the observations (children or teachers) within clusters (schools). This was done by adjusting the standard errors of the estimated coefficients at the school level using the cluster sampling module in Mplus. Standardized mean difference effect sizes (Cohen’s  $d$ ) of intervention effects were calculated based on the adjusted means (corrected

**Table 1.** Means and Standard Deviations at  $T_0$  and  $T_1$  and Test of Baseline Differences ( $T_0$ ) in Outcome Variables Between Study Conditions.

Variables	Control						Intervention						Test of baseline ( $T_0$ ) differences	
	$T_0$			$T_1$			$T_0$			$T_1$			B	SE B
	n	M	SD	n	M	SD	n	M	SD	n	M	SD		
<b>Child variables</b>														
Behavioral problems	175	2.36	0.73	177	2.51	0.73	209	2.54	0.77	210	2.53	0.75	+0.18	0.19
Emotional problems	175	2.46	0.69	177	2.57	0.67	209	2.41	0.67	210	2.41	0.69	-0.05	0.20
Closeness	175	41.53	7.78	177	41.01	7.95	207	41.85	6.56	210	41.69	6.90	+0.33	1.19
Social preference	171	0.08	0.35	168	0.13	0.44	200	0.18	0.32	201	0.17	0.37	+0.11	0.04*
<b>Teacher variables</b>														
Self-efficacy: SE	28	6.82	0.56	28	6.52	0.82	30	7.21	0.54	30	7.28	0.75	+0.39	0.10**
Self-efficacy: CM	28	7.29	0.72	28	7.22	0.87	30	7.17	0.82	30	7.38	0.87	-0.13	0.18
Burnout: EE	28	1.49	0.93	28	1.67	1.03	30	1.47	0.62	30	1.68	1.14	-0.02	0.23
Burnout: PC	28	4.77	0.65	28	4.61	0.71	30	4.90	0.50	30	4.83	0.52	+0.13	0.14
Closeness	19	0.23	0.10	21	0.18	0.09	23	0.29	0.11	23	0.23	0.14	+0.06	0.04

Note. SE = student engagement; CM = classroom management; EE = emotional exhaustion; PC = personal competence.

\* $p < .05$ . \*\* $p < .01$ .

for all demographic covariates in the model and the baseline measurement) of study outcome variables at  $T_1$ . Data and methods are available for verification from the corresponding author on request.

## Results

### Adherence to the GBG Protocol

Results showed that 87% of the teachers attended all three training sessions ( $M = 2.80$ ,  $SD = 0.55$ ). The mean number of individual coaching sessions received was 8.07 ( $SD = 1.98$ ). The mean number of GBG sessions was 51.93 ( $SD = 19.71$ ), and mean playtime for sessions was 25.75 min ( $SD = 13.22$ ). School consultants concluded that all teachers (100%) reached the expansion phase, and 55% of all teachers reached the generalization phase. In the generalization phase, playtime gradually increased up to 180 min a week (i.e., 60 min a day), and teachers' mean playtime in this phase was 144.18 min a week. With regard to the monthly coaching sessions, results showed that school consultants observed that teachers structured the classroom environment 85% to 97% of the time, depending on the specific activity. Also, school consultants observed that teachers praised students and teams 60% to 87% of the time, and that they ignored disruptive behavior 82% of the time. Finally, at the end of the school year, school consultants judged that 100% of the teachers structured the classroom environment to a satisfactory level, 97% of the teachers reinforced desired behavior in students, 93% ignored disruptive behavior, and 97% elicited student engagement. Given this level of treatment integrity, an intention to treat

approach was used when analyzing the impact of the GBG on children's and teachers' outcome domains.

### Descriptive Statistics

With regard to child demographic data, no baseline differences between conditions were found regarding sex, age, diagnosis of ASD, treatment, and medication. However, despite random assignment, mean IQ of the control group children ( $IQ = 95$ ) was higher at baseline than that of the intervention group children ( $IQ = 88$ ;  $p < .05$ ). With regard to teacher demographic data, no baseline differences were found for sex, age, type of educational degree, and years of teaching experience in general and special education.

Table 1 shows means and standard deviations of children's and teachers' study outcome variables at baseline and follow-up and a test of baseline differences. Intervention group children had, on average, higher social preference scores than control group children at baseline, but no differences were found for emotional and behavioral problems or teacher-child closeness. For teachers, baseline scores of self-efficacy in student engagement were higher for intervention group teachers than control group teachers. No differences were found in burnout symptoms or feelings of self-efficacy in classroom management.

### Impact of the GBG Intervention

As can be seen in Table 2, a statistically significant effect of study condition on children's emotional and behavioral problems was found. A closer examination of the means



**Table 2.** Results of Regression Analyses of Intervention Effects of Child and Teacher Outcome Variables.

Predictors	Child outcomes														
	Behavioral problems			Emotional problems			Teacher–child closeness			Social preference					
	B	SE B	$\beta$	B	SE B	$\beta$	B	SE B	$\beta$	B	SE B	$\beta$			
Baseline	0.62**	0.06	.64	0.54**	0.07	.54	0.60**	0.07	.59	0.57**	0.08	.48			
Condition	-0.11*	0.06	-.08	-0.12**	0.05	-.09	1.06	0.80	.07	-0.03	0.05	-.04			
Sex	-0.15*	0.07	-.07	0.03	0.05	.02	1.72**	0.56	.07	-0.03	0.05	-.03			
Age	-0.04	0.04	-.09	-0.06	0.05	-.14	0.32	0.45	.07	0.00	0.01	.00			
IQ	-0.00	0.00	-.07	-0.00	0.00	-.05	0.01	0.03	.02	-0.00	0.00	-.02			
Diagnosis	0.05	0.11	.04	0.01	0.06	.01	-2.38**	0.52	-.16	-0.04	0.05	-.04			

Predictors	Teacher outcomes														
	Student engagement			Class management			Emotional exhaustion			Personal competence			Teacher–child closeness		
	B	SE B	$\beta$	B	SE B	$\beta$	B	SE B	$\beta$	B	SE B	$\beta$	B	SE B	$\beta$
Baseline	0.64**	0.18	.43	0.54**	0.15	.48	0.89**	0.14	.64	0.60**	0.14	.56	0.57**	0.14	.53
Condition	0.42*	0.20	.24	0.17	0.16	.10	0.02	0.15	.01	0.13	0.11	.10	-0.00	0.03	.01
Sex	0.53**	0.19	.28	0.35*	0.15	.18	-0.05	0.27	-.02	0.13	0.12	.09	0.01	0.02	.05
Age	0.00	0.01	.04	-0.00	0.01	-.01	-0.02	0.01	-.16	0.01	0.01	.12	0.00	0.00	.09

shows that the intervention did not result in an actual decrease of emotional and behavioral problems, but prevented these problems from increasing as observed among control group children. Specifically, the teacher-rated emotional and behavioral problems of children in the intervention group showed no change at the end of the school year compared with the beginning of the school year, whereas control group children's emotional and behavioral problems showed a significant increase. This effect was small for both emotional problems ( $d = .18$ ) and behavioral problems ( $d = .15$ ). We found no statistically significant effect of the intervention on teacher–child closeness or on children's social preference scores.

With regard to teachers' outcomes, we found a significant effect of the GBG on teachers' self-efficacy in student engagement. Teacher self-efficacy scores were unchanged at the end of the school year for control group teachers, whereas self-efficacy scores concerning student engagement were increased in intervention teachers. This effect size was medium ( $d = .53$ ). No impact of the GBG was found on teachers' self-efficacy in classroom management, emotional exhaustion, personal competence, or teacher–child closeness.

## Discussion

Although the positive effect of the GBG intervention on children's emotional and behavioral problems is in line with results from previous studies in general education (Dolan et al., 1993; Petras et al., 2008; Van Lier et al., 2005), the

intervention did not result in an actual decrease in emotional and behavioral problems. Nonetheless, it prevented an increase in these problems at the end of the school year as was found among the control group children. This result is important as interventions such as the GBG have a strong emphasis on prevention. One of the primary goals of prevention models is stabilization (i.e., to prevent children's problems from getting worse).

Prior to the intervention, teachers were trained in implementing the GBG. Despite the fact that part of this training involves reinforcing desired behavior in children, an approach that is generally found to improve teacher–child closeness (Mainhard, Brekelmans, & Wubbels, 2011), we found no intervention effects on classroom social relations. This finding is also inconsistent with the results of a study by Witvliet et al. (2009) who found that the GBG improved peer relations in general education. As improvements in social relations between children and their teachers and peers are shown to underlie improvements in children's emotional and behavioral development (Buyse et al., 2008; Mainhard, Brekelmans, & Wubbels, 2011), this finding was disappointing. The absence of such an effect may either reflect a weakness of the GBG in influencing classroom relations in this challenging environment, or the need to prolong the use of this intervention over more than one school year. Next to prolonging the intervention, examining intervention effects over a 2-year period may also be important because previous research has shown that the first impression a teacher makes is crucial for the further development of classroom social relationships (Mainhard, Brekelmans,

Den Brok, & Wubbels, 2011). Specifically, this study showed that in classes in which children initially rated their teacher to be less close, classroom social relationships tended to decrease over time. Thus, first impressions may be difficult to change, regardless whether the teacher's skills and classroom conditions have improved and improvements may therefore only show in a new class with new students.

We found that the intervention increased teachers' sense of self-efficacy in student engagement. However, although the GBG encompasses a teacher training that focuses on improving teachers' competency in managing children's behavior, we found no effect on teachers' self-efficacy in managing the classroom. A possible explanation is that teachers' classroom management skills may have changed because of the coaching sessions, but the sessions did not change their sense of self-efficacy. Every month, the teachers in the intervention group were told how they could improve their GBG teaching skills, thereby focusing more on what they still had to learn instead of what they had already learned. This may have outweighed the possible positive effects of the intervention. Also, a change in teachers' sense of self-efficacy may only become apparent after the training and coaching sessions are finished.

Similarly, although the GBG aims to reduce teacher burden rather than to increase it (Kellam & Anthony, 1998), we found no intervention effect on teacher burnout symptoms. One explanation may be that teachers in special education face a heavy workload that was not compensated for by the effects of the intervention. Also, implementing a new intervention can be a burden for teachers as it may lead to uncertainty and frustration (Chang, 2009). Therefore, the possible gains for teachers may have been offset by the burden of implementing a new program in their already challenging classrooms.

All in all, the results of this study showed no or only modest intervention effects. One possible explanation may be the dosage of the GBG intervention. We found that the mean number of GBG sessions over a 1-year period was at least comparable with that of other GBG studies (Ialongo, Poduska, Werthamer, & Kellam, 2001; Kellam et al., 1994; Leflot et al., 2010; Van Lier et al., 2004). However, because we implemented the GBG in just 1 year, the total number of GBG sessions that children received was lower than among previous GBG studies, which may have affected our findings. Another explanation for the modest GBG effects is that behavior change may be more difficult to establish in segregated settings where there are fewer positive peer role models. As the GBG aims to reinforce desired behavior in children, more positive peer role models may aid a teacher's efforts to establish this behavior. Alternatively, our modest findings may have been due to measurement issues as we only used questionnaires that may be less susceptible to discern yearly changes. However, other GBG studies (Ialongo et al., 2001; Kellam et al., 1994; Leflot et al., 2010; Van Lier

et al., 2004) also primarily used questionnaires to measure intervention effects; some even similar to the ones used in this study and found a stronger GBG impact. Given the fact that the intervention had no impact on children's social relations with teachers or peers, and given the fact that improving social relations may underlie behavioral change (Buyse et al., 2008; Mainhard, Brekelmans, & Wubbels, 2011), it may be that the GBG intervention needs to include additional elements for use in this population of children who have psychiatric disorders and special educational needs. Without focusing on possible underlying factors, such as social relations, the potential of a single classroom intervention to change emotional and behavioral problems may be limited.

### Limitations

Our research has several limitations that merit attention. First, the randomization procedure of assigning schools to either control or intervention group differed between schools and 6 out of 34 classes in the intervention group did not participate in the study. Some of these teachers did not participate as a result of serious burnout problems, and, given that such problems were also our outcome measure, the fact that these teachers did not participate may have influenced our results. Second, special education teachers were allowed to make individual alterations to the GBG game play, and these alterations may have influenced the ability to change children's social, emotional, and behavioral problems. However, these individual alterations, such as using fewer rules, were required to successfully implement the intervention with children with psychiatric disorders. Third, we did not measure to what extent GBG elements were practiced in control classes. Thus, we cannot say how many of the GBG elements, such as the use of positively formulated classroom rules and praise, were systematically used by teachers in the control group. However, GBG materials such as pictograms were not available for the control group. In addition, by randomizing at the school level, we reduced the risk of contamination of GBG principles to control group teachers. Fourth, teacher reports of children's emotional and behavioral problems were used. Teachers were not blind to intervention condition, and the significant findings in children's outcomes may stem in part from the resulting teachers' bias. However, teachers are often used as informants of children's classroom behavior. Previous studies have also shown that GBG's impact on children's behavior, as assessed by teacher reports, coincided with peer nominations and children's self-reports (Petras et al., 2008).

### Conclusion

This study offers insight into the impact of the GBG in special education and extends research by examining the

effects of the GBG in a clinical population of children with psychiatric disorders and their teachers. Impact of the GBG on children's emotional and behavioral problems was small but significant. The finding that this universal preventive intervention is also able to positively affect this clinical population is important because these children are at high risk of future maladaptive outcomes, and classroom-based interventions can be considered relatively easy and cost-beneficial to implement (Embry, 2002).

Given the small effect sizes of GBG's impact in this sample, in future research, we recommend using a 2-year study design with a 2-year GBG implementation to further examine the effects of an increased GBG dosage. Moreover, a 2-year design might help disentangle the effect of first impressions from GBG effects on social relationships. Other research also showed that GBG effects may only be visible after 2 years (Leflot et al., 2010), with a new class of students and a teacher who has already internalized many skills trained during the previous year. In addition, in the future researchers may want to include direct observational measures of children and teachers.

The GBG may also need some additional elements and adjustments to improve children's social classroom relationships. Additional elements may include, for example, a social skill training that is attuned to children's specific needs and difficulties (Bellini, Peters, Benner, & Hopf, 2007; Quinn, Kavale, Mathur, Rutherford, & Forness, 1999). Regarding adjustments, the response cost procedure of removing cards for not following rules was the LL element according to teachers and may have negatively affected the teacher-child relationship. Providing, rather than removing, cards may possibly improve the current adapted GBG intervention, a possibility that requires further research.

### Acknowledgments

The authors thank all special education children and teachers for their participation in this study.

### Authors' Note

This study was conducted by Yulius, the Erasmus MC-Sophia Children's Hospital, VU University Amsterdam, Utrecht University, and the Center for Educational Services (CED-Groep).

### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by ZonMw, the Netherlands Organization

for Health Research and Development (Project Number 15700.3011) and registered in the Netherlands Trial Register under Number 2484.

### Supplemental Material

Supplemental material for this article is available at [jpb.sagepub.com/supplemental](http://jpb.sagepub.com/supplemental).

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