Chapter 2
Meta-analysis on Effectiveness of Behavioral Classroom Programs in Primary School Children (N = 18,094). These programs have positive effects on:
- Teacher-rated disruptive behavior. Effects were equal irrespective of age, gender, type and severity of problem behavior
- Classroom-observed off-task behavior

Chapter 3
PR Program improves teacher-rated
- ADHD symptoms
- Social functioning

Chapter 4
No significant effects of the PR Program on measures other than teacher ratings

Chapter 5
Moderating program effects. Larger treatment gains for
- Older children
- Children from higher educated families
- Children without comorbid conduct or anxiety problems

Chapter 6
Children with classroom ADHD symptoms experienced substantial peer problems on most outcomes. Peer problems were positively related to ADHD symptoms and conduct problem and were stronger for younger than for older children

Figure 1. Schematic overview of the results of this dissertation.
The primary aim of this dissertation was to examine the effectiveness of the Positivity & Rules Program (PR program), a manualized behavioral teacher program targeting symptoms of Attention-Deficit Hyperactivity Disorder (ADHD) in the classroom. A diverse set of instruments were used (e.g., teacher and parent ratings, classroom observations, actigraphy and peer ratings) to obtain a comprehensive view of the program’s effectiveness, while also assessing moderators influencing the program’s effectiveness. The second aim was to elaborately assess the peer problems experienced by children with ADHD symptoms. This aim was realized by investigating the relations of these children with their classmates through a diverse set of sociometric measures and by examining the association of ADHD symptoms (inattention and hyperactivity/impulsivity) and related problem behavior (conduct problems, emotional problems and prosocial behavior) with peer problems.

First, a summary will be provided of the main findings of each chapter (see also Figure 1). Thereafter, these findings will be integrated in a general discussion where the findings will be placed in a broader context, considering relevant literature. Subsequently, strengths and limitations, clinical implications and recommendations for future research are discussed.

Summary of the Main Findings

Chapter 2 provides a meta-analytic review on randomized controlled trials (RCTs) into the effects of behavioral classroom programs on disruptive behavior in the classroom (i.e., symptoms of ADHD, ODD and/or CD). The meta-analysis included 18 RCTs published between 1980 and 2016 and included 18,094 elementary school children. Results showed evidence for small but significant beneficial effects of behavioral classroom programs on teacher-rated disruptive behavior ($d = -0.20$) and on classroom-observed off-task behavior ($d = 0.39$). There were no significant effects of behavioral classroom programs on classroom-observed disruptive behavior. The effects of such programs on teacher-rated disruptive behavior were unrelated to age, gender, type of problem behavior (ADHD symptoms versus ODD/CD symptoms) and severity of problem behavior (comparing clinical, at-risk, and community samples). Shorter programs were more effective than more lengthy programs ($R^2 = 0.43$). As behavioral classroom programs were equally effective irrespective of age, gender, type and severity of problem behavior, results advocate using cost-effective universal programs for entire classrooms as first treatment when targeting disruptive classroom behavior. More intensive individual programs may then be reserved for children not responding adequately to universal behavioral programs.
In Chapter 3, an RCT was used to assess the effects of the PR program on teacher- and parent-reported behavioral, social, and emotional functioning of children with high levels of ADHD symptoms \( (N = 114) \). Compared to most behavioral teacher programs that often involve an intensive training, the manualized PR program does not include a face-to-face training for teachers and involves student-focused and classroom-focused strategies, thus holding promise for a sustainable large-scale implementation against little cost. The PR program involves elements of evidence-based behavioral classroom programs (e.g., the Summer Treatment Program; MTA Cooperative Group, 1999), such as psycho-education for the teacher, classroom behavior management strategies, and contingency management (e.g., a reward and time-out system; Pelham & Fabiano, 2008). Results of the RCT showed evidence for positive effects of the PR program on teacher-reported ADHD symptoms and on teacher-rated social skills \( (0.01 < f^2 > 0.36) \) in children receiving the PR program \( (n = 58) \) compared to controls \( (n = 56) \). Results also revealed a larger reduction of conduct problems for children in the intervention group compared to controls, but this effect was not significant when adjusting for baseline differences. No significant program effects were found on teacher-rated emotional problems, peer problems and prosocial behavior. There were no effects of the PR program on parent-rated outcomes, which implies that the positive effects on ADHD symptoms and social functioning did not generalize to the home setting. Satisfaction among teachers was high, as well as implementation fidelity. Given the positive program effects found in this study, the PR program holds promise for improving classroom behavior in children with ADHD symptoms.

Given teachers’ involvement in treatment delivery, Chapter 4 elaborates on Chapter 3 by investigating whether the positive teacher-rated effects of the PR program on ADHD symptoms and social functioning could be confirmed by classroom observations, actigraphy and peer ratings. Results on the actigraphy and classroom observations did not reveal beneficial effects of the PR program on ADHD symptoms, nor did the peer ratings reveal treatment gains on peer acceptance. Possible explanations of these negative findings may be that the PR program mainly improves the perception of the teacher rather than the child’s behavior, or that the used instruments may have been insensitive to program-related improvements.

Correlational analyses between the teacher-rated ADHD symptoms and classroom observations, actigraphy and peer ratings revealed no significant correlations with one single exception: teacher-rated Hyperactivity/Impulsivity
was weakly related to actigraphic hyperactivity \((r = -0.25, p = .012)\). The absence of program effects on the outcome measures used in this study, may thus be related to the different behavioral aspects measured by these instruments compared to teacher-rated ADHD symptoms. This study underlines the importance of using different measures of classroom behavior to study program effects.

**Chapter 5** sheds more light on the beneficial teacher-reported effects of the PR program by exploring possible moderators of the program effects on ADHD symptoms and social functioning. Results showed that effects of the PR program on ADHD symptoms were larger for older children and for children from highly educated families. Results on ADHD symptoms further revealed smaller program effects for children with high levels of both ADHD symptoms and anxiety. For social functioning, results showed evidence for superior program effects for children scoring low on peer acceptance, and for children who scored low on social functioning and did not exhibit comorbid conduct problems. No moderating effects were found for gender, IQ, initial severity of problem behavior, nor for teacher experience and class size.

In sum, results indicated that treatment effects were larger for older children and for children from highly educated families, while comorbid conduct problems or anxiety impeded treatment gains. Our results suggest that the PR program is mainly suitable for children with ADHD symptoms not facing additional challenges. The program may not be able to address the needs of children from low-educated families and of those with comorbid psychopathology. These finding emphasizes that the PR program should be used in a preemptive stage before behavioral problems escalate or transfer to multiple domains.

In **Chapter 6** many diverse aspects of peer relations were elaborately assessed for children with high levels of ADHD symptoms, using an extensive set of sociometric peer measures. Additionally, this study explored whether specific problem behaviors (e.g., inattention and conduct problems) were related to the observed peer problems. Results indicated that children with high levels of ADHD symptoms \((N = 111; 91\%\) non-referred) were substantially impaired on many aspects of peer relations \((d = 0.25 - 0.65)\) compared to their classmates \((N = 2,526)\). Children with ADHD symptoms had a lower social preference (i.e., less popular), higher social impact, fewer dyadic friendships, and they were more often rejected and nominated as non-friend. Children with ADHD symptoms also liked their peers more than they were liked by those peers (i.e., negative
imbalance). Finally, children with ADHD symptoms nominated peers with a lower social preference as friends, while their non-friends had higher social preference scores, indicating that children with ADHD symptoms seek friends that are also less popular.

Furthermore, results showed that mainly hyperactivity/impulsivity, inattention and conduct problems were related to peer problems, although relationships were strongest for conduct problems. The associations between both ADHD symptoms and conduct problems with peer problems were stronger for younger than for older children. Nonetheless, hyperactivity/impulsivity in older children was related to more friendships with peers that were rejected by the larger peer group. Given the substantial peer problems of children with ADHD symptoms, early interventions for these children (such as the intervention ‘Making Socially Accepting Inclusive Classrooms’, MOSAIC; Mikami et al., 2013) appear crucial and might help to prevent further escalation of problem behavior into clinical ADHD.

**General Discussion**

The main aim of this dissertation was to investigate the effectiveness of the PR program. As described in the general introduction, the PR program distinguishes itself from other behavioral programs by the low intensity of the program and the ability for teachers to use the program without additional teacher training. This increases the likelihood that the program can be successfully implemented in practice and could be sustainable on the long-term against little cost.

A secondary aim was to thoroughly investigate peer problems of children with ADHD symptoms in the classroom.

**Main Effects of the PR Program**

The findings described in this dissertation showed that teachers using the PR program in their classroom observed small but significant improvements on ADHD symptoms and social functioning of student with high levels of ADHD symptoms (Chapter 3). These findings are in line with our meta-analytic results showing small, positive effects of behavioral teacher programs on teacher-rated symptoms of ADHD and ODD/CD (Chapter 2). In contrast with our meta-analysis no significant effects were found of the PR program on conduct problems, when controlling for baseline differences (Chapter 3). Neither were program effects found on teacher-rated peer problems (Chapter 3). Unfortunately, the treatment gains on ADHD symptoms and social functioning observed by teachers who were involved in treatment delivery, were not confirmed by other
measures (i.e., actigraphy, classroom observations, and peer ratings; see Chapter 4). This is in line with two meta-analyses that show small, positive effects of classroom behavioral programs on teacher-rated ADHD symptoms, whereas no program effects were found when using classroom-observations as measure of ADHD symptoms or disruptive behavior (Sonuga-Barke et al., 2013 and Chapter 2, respectively, but see also MTA Cooperative Group, 1999). The lack of treatment gains of the PR program on peer acceptance as measured by peer ratings corresponds with the lack of program effects on teacher-reported peer problems. Less-proximate measures (i.e., probably blinded measures) have captured positive effects of behavioral programs on off-task behavior (Chapter 2, meta-analysis), conduct problems and parenting (Daley et al., 2014, meta-analysis). This indicates that more objective evidence exists for the effectiveness of behavioral programs on a variety of outcome measures, despite the failure to find such evidence in the present RCT.

The results of Chapter 3 and 4 suggest that teacher-reported effects of the PR program on ADHD symptoms and social functioning might reflect a change in teacher perception regarding the child’s functioning, rather than an actual behavior improvement of the student. This change in teachers’ perception may be explained by teachers being biased due to positive treatment expectations and their investment in the program (Sonuga-Barke et al., 2013). Another explanation may be an increased tolerance or coping of teachers with ADHD symptoms (Daley et al., 2014), for example due to the psycho-education of the PR program, which might enhance positive attitudes and behavior towards individuals with ADHD (Nussey et al., 2013). Given the relatively low correlations between teacher-rated ADHD symptoms and other ADHD measures (i.e., classroom observation and actigraphy; Chapter 4), it is also possible that these instruments captured different aspects of the child’s behavior. Another explanation to be considered is that classroom observations and actigraphic measures were unable to capture program-related improvements due to limitations of these instruments (see discussion of Chapter 4). For example, the duration of the classroom observation used in this study (2 x 8 minutes) might have been too short to capture program-related improvements. One example of a limitation inherent in actigraphy, is its inability to distinguish inappropriate hyperactivity from appropriate activity, such as raising your hand before asking a question.

As already discussed, we found positive effects of the PR program on teacher-rated social functioning of students with high levels of ADHD symptoms
(Chapter 3), and these effects were larger for children who were not liked by peers (Chapter 5). However, our teacher program did not improve teacher-rated peer problems nor peer acceptance (Chapter 3 and 4). These findings suggest that the PR program may improve social behavior of the student towards teachers, while not improving social behavior towards peers. This seems plausible as social interactions between the teacher and the student are generally more related to teachers' educational task than social interactions between classmates (Baker, 2006). Moreover, teachers using the PR program may have focused on targeting behavior disturbing teacher instructions and lessons, rather than focusing on behavior disrupting social interactions with peers. Another explanation might be that participants' negative behavior towards peers was reduced, without improving the negative perception of peers towards that child. Literature shows that peer rejection is difficult to change once established, even if negative behavior of the rejected child reduces over time (Mrug, et al., 2007). The stability of negative peer perceptions may also be explained by negative expectations of peers. Negative expectations can result in negative or ambiguous behavior of peers towards the disliked child and thus hamper positive behavior change of the disliked child (Harris, Milich, Corbitt, Hoover, & Brady, 1992). Another explanation for the stability of negative peer perceptions might be related to peers attributing behavior improvements of the disliked child to external factors (e.g., others being nice) or unstable factors (e.g., the child’s mood; Hymel, 1986). Hence, it could be that the intervention period of 18 weeks was too short to improve the negative perception of peers regarding their classmate with ADHD symptoms.

Even though treatment gains were limited to teacher-rated outcomes, the importance of improving teacher perceptions of a child’s behavior should not be underestimated. An improved perception of teachers may affect their behavior towards their student, which may improve the teacher-child interaction (Stuhlman & Pianta, 2002). A positive teacher-child interaction may result in enhanced school adjustment and academic achievement by fostering motivation, engagement in learning activities, and the development of social and behavioral competences (Pianta, 1999). A close teacher-child relationship can be particularly important for children displaying disruptive classroom behavior (e.g., ADHD symptoms) who often receive negative feedback from teachers and peers. As teacher-child interaction was not assessed in our study, future research is necessary to examine whether the PR program can improve teacher-child interactions.
It could be argued that additional expert involvement could have improved the
effectiveness of the PR program, but literature on this topic is inconsistent.
While a review on the effectiveness of self-help interventions for parents of
children with behavior problems suggests that adding minimal levels of therapeutic
support improves child outcomes (O’Brien & Daley, 2011), another meta-analytic
study suggests that self-help parenting interventions are equally effective compared
to therapist-led parenting interventions (Tarver et al., 2014). So far, no studies
have investigated the added effects of therapist support to low-intensive teacher
programs. More research is needed to assess whether the effectiveness of the
PR program can be improved through therapist involvement.

**Moderating Effects of the PR Program**
As discussed in Chapter 5, the beneficial effects of the PR program on teacher-rated
ADHD symptoms were larger for older children, children from highly
educated families and those without severe comorbid conduct or anxiety
problems. These findings are in line our hypothesis that this low-intensive
behavioral teacher program is more effective for children with ADHD symptoms
not facing additional challenges, while more intensive therapeutic support appears
needed for children from low-educated families and for those with severe
comorbid problem behavior (van den Hoofdakker et al., 2010). Particularly
comorbid conduct problems seem to impede treatment gains, because the
current findings indicate that conduct problems are not effectively targeted by
the PR program (Chapter 3). Moreover, in the case of comorbid conduct
problems, the effect of the program on ADHD symptoms and social functioning
is also smaller (Chapter 6). No moderating effects of the PR program were found
for gender, IQ and initial severity of problem behavior, which is largely in line
with our meta-analytic results revealing no moderating program effects of
gender and severity of problem behavior (Chapter 2).

The moderating role of age found in this study is consistent with other studies
revealing larger effects of behavioral programs for older children (Comer et al.,
2013; van den Hoofdakker et al., 2010, but see also Nowak and Heinrichs, 2008,
and Enebrink et al., 2012), while not being in line with our meta-analytic results
(Chapter 2). Perhaps, older children can more easily inhibit their impulses and
comply with the challenges imposed by teachers implementing the PR program
than younger children, because brain development and socialization improve
with age (Faraone, Biederman, & Mick, 2006).
Our finding that the PR program is more effective for children from highly
educated parents, is in line with several reviews discussing predictors and
moderators of treatment outcomes in children with ADHD (Chronis et al., 2006; Hoza et al., 2006). In most of those treatments, however, parents were involved in delivery of treatments (e.g., medication and parent programs), in which case the moderating role of parental educational level could be explained by greater involvement and greater treatment adherence of highly educated parents (La Greca et al., 2009). This explanation is less likely in our study where parents were not involved in treatment delivery. A more likely explanation might be related to teachers’ attitudes and expectations. Children from families with a low socioeconomic status (SES, often quantified by parental education) are often perceived less positively by teachers and teachers have lower expectations of these children in terms of academic and behavioral functioning (McLoyd, 1998). Hence, it is possible that teachers also expect less treatment improvement in these children.

Although the current results indicate that the PR program is equally effective for all children with ADHD symptoms, regardless of the severity of their ADHD symptoms, children with comorbid conduct or anxiety symptoms seem to profit less from this program. More specifically, no treatment gains on ADHD symptoms were found for anxious children with high levels of ADHD symptoms, while large improvements on ADHD symptoms were found for non-anxious children with high levels of ADHD symptoms. The reason that others did find larger treatment gains for behavioral programs in children with ADHD and comorbid anxiety (March et al., 2000; van den Hoofdakker et al., 2010; Van der Oord et al., 2008a) could be related to the larger involvement of parents in these programs. Parents of children with ADHD and comorbid anxiety symptoms could be more anxious and overprotective towards their child than parents of children without comorbid anxiety symptoms (Pfiffner & McBurnett, 2006) and might thus be more inclined to conform to treatment protocols (Van der Oord et al., 2008a), possibly resulting in larger treatment gains. In our manualized teacher program, parents were not involved in treatment delivery at all, which could explain the differences between the study results. Perhaps, the perceptions of teachers can explain the lower gains of the PR program for anxious participants. Anxious children are likely to show very intense help-seeking and proximity-seeking behaviors towards teachers, which could result in teachers perceiving the child as challenging and causing frustration (Pianta & Nimetz, 1991), thus impeding treatment gains. Providing teachers with more elaborate information on comorbid internalizing and externalizing problems in children with ADHD and additional therapeutic support might help to increase the effectiveness of the PR program (Gillberg et al., 2004).
Based on the findings of this dissertation, the low-intensive, manualized PR program appears to be a promising behavioral teacher program for children with ADHD symptoms not facing additional challenges. However, future research is necessary to assess whether instruments other than teacher-ratings can confirm the positive treatment gains of the PR program. Nonetheless, thanks to the low costs and the relatively low intensity of the PR program compared to other more intensive behavioral programs, this teacher program has the potential of being successfully and sustainably implemented on a large scale at little costs.

**Peer Problems**

In Chapter 6, we provide evidence for substantial peer problems of children with ADHD symptoms at school, such as being less popular and more often rejected, and having fewer and less popular friends. These impairments were positively related to inattention, hyperactivity/impulsivity, and comorbid conduct problems, although strongest relations were found for conduct problems. The relationship between both ADHD symptoms and conduct problems with peer problems was stronger for younger than for older children. Nevertheless, for older children, hyperactivity/impulsivity was related to more reciprocal friendships with peers that were (also) rejected by the larger peer group. Literature has shown that peer rejection is associated with a more negative self-perception (Ladd & Troop & Gordon, 2003) and more adjustment problems of children with ADHD, while also increasing the risk of adverse outcomes (e.g., maladjustment at school, mental health problems, and criminal offenses; Mikami & Hinshaw, 2006; Murray-Close et al., 2010; Parker et al., 2006). Given the substantial peer problems experienced by children with ADHD symptoms (Chapter 6) and the negative effects of these peer problems, improving the social skills of children with ADHD symptoms is extremely important. As it is very difficult to change negative peer perception after being established (Mrug et al., 2007), specific peer-based interventions such as the intervention ‘Making Socially Accepting Inclusive Classrooms’ (MOSAIC; Mikami et al., 2013) might help to improve positive peer relations in children with ADHD symptoms.

**Strengths and Limitations**

As already discussed previously, this study adds to the literature by describing the effectiveness of a behavioral teacher program that is less intensive compared to most similar programs, which require intensive and expensive teacher training. As funding is often not available after research is terminated, the long-term sustainability of such programs is often compromised. Consequently, the PR program could become a valuable contribution to existing behavioral programs...
for having the potential to be implemented nation-wide against little costs. The high implementation fidelity and high teacher satisfaction regarding the PR program further supports the idea that this program could be successful on the long-term. Treatment fidelity was, however, assessed through teacher self-report rather than an independent classroom observation, but practical constraints precluded implementing observations of treatment fidelity in this study. Future research is necessary to assess whether the program’s treatment fidelity can be confirmed through observations.

Another strength of this study is the use of actigraphy, classroom observations, and peer ratings to assess the effectiveness of the PR program. The number of well-designed randomized controlled trials (RCTs) using those instruments to investigate the effectiveness of behavioral teacher programs for ADHD is scarce, with only two of such RCTs using classroom observations (Miranda et al., 2002; MTA Cooperative Group, 1999), two using peer nominations to assess treatment gains on social functioning (Pelham et al., 1993b), and none using actigraphy. Despite the lack of positive program effects on measures other than teacher ratings, reporting these findings is still important to understand the scope of the program’s effects. We, therefore, encourage other effectiveness trials to use and report on less-proximate outcomes as well.

Regarding the classroom observations, two limitations need to be mentioned. First, it should be noted that the observers were not blind to treatment allocation in our study due to the visibility of program elements within the classroom. Nonetheless, the current results were probably not influenced by this potential bias since no program-related effects in favor of the intervention group were found on classroom-observed ADHD symptoms. Second, we could not assess effects of the PR program on classroom-observed conduct problems due to extremely low levels of aggressive behavior during our classroom observations. Perhaps, the time-sampling approach used in our observations – although commonly used – might have been less appropriate to capture low-frequency behaviors such as aggression (Henry & Group, 2006). Instead, observations during a longer period or during more unstructured situations might have resulted in a more reliable estimate of the actual rates of aggression. Unfortunately, such observations are very time-consuming and expensive.

Another limitation of this study is the fact that we did not include a measure of teacher-child interaction. This precluded us to investigate whether the PR program did result in improved interaction between teachers and students with
ADHD symptoms. Given the lack of program effects on measures other than teacher ratings, this would have been a valuable contribution to the current results. As teachers noticed improvements of their student’s behavior, it is likely that teacher gave more positive feedback to this child, which could have improved the teacher-child interaction (Stuhlman & Pianta, 2002). However, this claim awaits further research.

A further limitation of the current RCT is that treatment expectations of teachers and/or parents were not assessed. This prevented us from assessing whether the inconsistent results (treatment gains on teacher-reported ADHD symptoms and social functioning, but no program effects on actigraphy, classroom observations and peer ratings) could be explained by an expectation effect of teachers in the intervention group.

The unequal gender distribution in the current sample that mainly comprised boys (84%), limits the generalizability of the teacher-reported effects of the PR program to girls and precludes us from drawing firm conclusions on whether the program is equally effective for boys and girls. This is a common problem in ADHD research where boys are clearly overrepresented (Gershon & Gershon, 2002). Using community samples in effectiveness trials could help to assess the effectiveness of behavioral programs for girls with ADHD symptoms and to verify whether susceptibility to these programs depends on gender.

Finally, power was rather limited to find significant moderators influencing the program’s effectiveness due to the relatively small sample size (Chapter 5). Limited power can be particularly problematic for three-way interactions, for example those assessing moderating effects of comorbid psychopathology (e.g., group x ADHD symptoms x conduct problems). Still, despite the limited power, it is worth mentioning that some significant ($\alpha < .05$) moderating three-way interactions were found (e.g., group x ADHD symptoms x anxiety problems).

**Clinical Implications and Future Research**

Based on the current findings, the PR program could be a promising intervention for a large group of children displaying ADHD symptoms at school, particularly for children from highly educated families and children without comorbid psychopathology. However, it should be noted that the effects of PR program were small, although it needs to be emphasized that behavioral interventions commonly yield small effects (Sonuga-Barke, et al., 2013). This implies that it might be necessary to use other treatments (e.g., a complementary parent
behavioral program or medication) in combination with this teacher behavioral program to normalize disruptive classroom behavior or to improve behavior at home.

Low-intensive cost-effective programs such as the PR program could be extremely valuable for teachers and schools. Due to the recent changes in the Dutch educational system (in the Netherlands referred to as ‘Passend Onderwijs’), regular primary schools have the responsibility to retain children with psychiatric or learning disabilities in their schools if possible, thus reserving special education schools for children not functioning well in regular education. Given this obligation for regular primary schools to provide adequate education to a large group of children with psychiatric or learning disabilities, adequate knowledge and skills of teachers to cope with large diversity of problem behavior (e.g., ADHD symptoms) is essential. Unfortunately, many teachers report to have insufficient knowledge about ADHD and to feel insufficiently equipped to target these symptoms in the classroom (Moldavsky & Sayal, 2013; Rose et al., 2005). Meanwhile, teachers’ workload is often high and class sizes are large, which increases the risk of burnout among teachers (Hakanen, Bakker, & Schaufeli, 2006; Kyriacou, 2001). Inexpensive behavioral programs of low intensity that are suitable for a large group of children might thus be valuable for many teachers. As the PR program includes both student-focused and classroom-focused strategies, this program might even be suitable as preventive universal intervention. A randomized effectiveness trial on community samples should be conducted to investigate this hypothesis.

Most teachers appear satisfied with the PR program as 98% of the teachers have reported that they intended to use the PR program in the future or most important elements thereof. Still, there are some changes that could be made to further improve the PR program. First, it is advised to include more information and practical tips in the manual about how to ignore undesired behavior. Ignoring undesired behavior can be very difficult for teachers, particularly if the behavior is disturbing for other students or for the teacher itself and because undesired, ignored behavior tends to increase before it will fade out. Providing teachers with more practical tools of how to put this technique into practice, while still emphasizing the importance of rewarding desired behavior, might make the PR program more effective. Second, extra support for teachers using the functional behavior assessment might be a valuable contribution. In many behavioral programs (e.g., MTA Cooperative Group, 1999; Van Den Hoofdakker et al., 2007), individual guidance is given when performing functional behavior
assessments due to the potential difficulties and pitfalls one might encounter. Therefore, online exercises for teachers to practice with functional behavior assessments and online feedback afterwards could support teachers when performing these assessments. Moreover, the manual could more explicitly mention that this technique is very difficult and that it is recommended to consult their school counselor or the help desk of the PR program in case of any doubts. A third suggestion might be to include more psycho-education in the manual regarding comorbid psychopathology (e.g., ADHD and conduct problems) and to provide extra (online) assistance for teachers of students with comorbid psychopathology, for example through the online helpdesk. Perhaps, this will increase the effectiveness of the PR program for this comorbid subgroup who currently benefit less from this program. Of course, future research would be necessary to examine whether abovementioned suggestions increase the effectiveness of the PR program, for all students or for a subgroup of students.

As this is the first study into the effectiveness of the PR program, there are still enough issues that are worth investigating in future research, some of which have been mentioned previously. First, it would be interesting to further investigate whether the effects of the PR program are limited to teachers' perception of a child's behavior, or whether beneficial effects can be found on other teacher variables (e.g. teacher-child interactions, teacher self-efficacy and knowledge of ADHD) or on other less-proximate outcomes. For example, more lengthy classroom observations during structured and unstructured classroom situations could be more appropriate to capture program-related gains on conduct problems and ADHD-related behavior such as off-task behavior (Henry & Group, 2006; Hintze & Matthews, 2004). Second, we also advise to assess effects of the PR program after a longer intervention period than the current 18 weeks. Negative peer perception is difficult to change and the current intervention period might have been too short to improve peer acceptance. Finally, the long-term program effects and the moderating and mediating effects of many interesting variables on treatment outcome are still unexplored, such as problems at home (e.g., maternal depression or marital problems) or several teacher variables (e.g., teachers’ treatment expectations, treatment acceptance, and treatment fidelity). Knowledge regarding the factors influencing the effectiveness of the PR program, could help clinical and educational experts to determine the most appropriate treatment for every student.

During the last four years, many parents and teachers have expressed the need for a low-intensive behavioral parent program that can be used besides our
behavioral teacher program. Therefore, a behavioral parent program is currently being developed at the Vrije Universiteit Amsterdam to target ADHD symptoms at home. Like the PR program, the focus will be on creating a low-intensive, inexpensive program that can be used for both children with clinical ADHD, as well as for children displaying ADHD symptoms without meeting full diagnostic criteria. A comprehensive behavioral program involving both a teacher and a parent component will be a valuable expansion of the current teacher program, that may help to reduce ADHD-related problem behavior and prevent an escalation of problem behavior later in life, stigmatization, and the need for intensive, costly treatments.

REFERENCES


