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Cross-Informant Disagreement on Behavioral Symptoms in Adolescent Attention-Deficit/Hyperactivity Disorder and Its Impact on Treatment Effects

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Abstract: In assessing adolescent behavior difficulties, parents, teachers, and the adolescents themselves are key informants. However, substantial disagreement has been found between informants. Specifically, children with attention-deficit/hyperactivity disorder (ADHD) tend to overestimate their competencies, also known as “positive (illusionary) bias.” This study compared parent, teacher, and adolescent ratings of ADHD and other behavioral symptoms in a sample of 114 adolescents with ADHD. Further, the effect of cross-informant disagreement (CID) on treatment outcomes was investigated in a subsample of 54 adolescents who had undergone a training and coaching intervention. Overall, there was moderate agreement among informants. Parent and adolescent ratings were more strongly correlated with each other than with teacher ratings. The strongest discrepancy was found between teacher and adolescent ratings on prosocial behavior. This discrepancy explained 12% of the variance in parent-rated ADHD symptom severity after the intervention. The treatment was less effective in participants with high teacher-adolescent disagreement on prosocial behavior ($d = 0.41$) than with low disagreement ($d = 0.98$). These findings suggest that professionals working with adolescents with ADHD should consider multiple sources of information before initiating treatment and pay attention to cross-informant disagreements because these may indicate a risk of diminished treatment effects.

Keywords: informant discrepancies, inter-rater reliability, positive illusionary bias, response to treatment, ADHD

Cross-Informant Disagreement on Behavioral Symptoms

When assessing students' behavior difficulties, multiple sources of information should be considered, because cross-informant disagreement (CID) can hinder proper identification of shared treatment goals and thus presents a risk for the success of an intervention (Hawley & Weisz, 2003). For adolescent students, generally, parents or caregivers, teachers, and the adolescents themselves are the eligible informants. However, there is only low-to-moderate agreement on behavioral symptoms among informants, not only because of methodological errors but due to different perspectives on a complex and multifaceted situation (De Los Reyes et al., 2015; Dirks, De Los Reyes, Briggs-Gowan, Cella, & Wakschlag, 2012).

For example, the results of a classic meta-analysis (Achenbach, McConaughy, & Howell, 1987) showed that the mean correlations of behavioral and emotional problems between parents, teachers, and children ranged from $r = .20$ to $.27$. A recent meta-analysis (De Los Reyes et al., 2015) yielded similar findings, with mean correlations between $r = .20$ and $.26$ for internalizing symptoms and between $r = .28$ and $.32$ for externalizing symptoms. CID has been found to be higher on specific competencies such as prosocial behavior than on overall problems and difficulties (Goodman, 1997, 2001) and higher between teachers and adolescents than between parents and adolescents (Becker, Woerner, Hasselhorn, Banaschewski, & Rothenberger, 2004; Goodman, Lamping, & Ploubidis, 2010).

A meta-analysis of ratings of the symptoms of attention-deficit/hyperactivity disorder (ADHD) in children and

adolescents (Willcutt et al., 2012) found moderate correlations between parent and teacher ratings (inattention $r = .43$, hyperactivity-impulsivity $r = .42$). Some variance in findings was found between studies that focused exclusively on adolescent ADHD: with regard to symptoms of inattention, correlations between adolescents and parents/caregivers have been found to range from large/moderate (Gadow et al., 2002; Hartung, Milich, Lynam, & Martin, 2002) to low/nonsignificant (Hogue, Dauber, Lichvar, & Spiewak, 2014; Sibley et al., 2012), to be moderate between parents and teachers (Sibley et al., 2012), and to be low/nonsignificant between adolescents and teachers (Gadow et al., 2002; Sibley et al., 2012). Regarding symptoms of hyperactivity-impulsivity, correlations between adolescents and parents/caregivers have been found to range from moderate (Gadow et al., 2002) to low/nonsignificant (Hartung et al., 2002; Hogue et al., 2014; Sibley et al., 2012), to be moderate between parent and teacher ratings (Sibley et al., 2012), and to be low/nonsignificant between teachers and adolescents (Gadow et al., 2002; Sibley et al., 2012). In sum, low-to-moderate agreement on ADHD symptoms has been found between adolescents, parents, and teachers, with some variance between studies.

Positive Bias in ADHD Self-Ratings

A tendency to underestimate problems and overestimate competencies has been found in the self-ratings of children with ADHD, referred to as the “positive illusionary bias” (Owens, Goldfine, Evangelista, Hoza, & Kaiser, 2007) or just “positive bias” (PB). That is, children with ADHD tend to overrate their academic, behavioral, and social competencies compared to ratings by study coders or teachers (Hoza, Pelham, Dobbs, Owens, & Pillow, 2002). Such discrepancies seem to be especially strong in the domains where student achievement is low (Hoza et al., 2004). For example, before solving a puzzle task, boys with ADHD had no different expectations of their anticipated success than boys without ADHD, but performed significantly worse (Hoza, Pelham, Waschbusch, Kipp, & Owens, 2001). This finding indicates that the boys with ADHD had overly positive unrealistic expectations of their own competencies compared to the boys without ADHD.

PB supposedly has a protective function and helps children to deal with feelings of inadequacy, particularly in the social realm (Ohan & Johnston, 2002). This self-protection hypothesis is backed by the results of longitudinal studies showing that decreases in PB were associated with increases in depressive symptoms over time (Hoza, Murray-Close, Arnold, Hinshaw, & Hechtman, 2010).

PB has been found to have various negative correlates and consequences. Children with ADHD and PB showed less prosocial behavior than children without ADHD and

children with ADHD without PB (Linnea, Hoza, Tomb, & Kaiser, 2012). Further, higher PB was found to predict lower peer preference and stronger oppositionality in children with ADHD who attended a two-week summer day program together with children without ADHD that aimed at improving the social inclusion of children with ADHD (Jia, Jiang, & Mikami, 2016). Similarly, in a prospective study, PB assessed at a mean age of 10.4 years in children with ADHD predicted risky driving behavior eight years later (Hoza et al., 2013).

With regard to treatment, PB may represent a risk of failure or diminished effects. That is, children with ADHD who disagree with parents or teachers on whether they have a problem may not see the relevance of a change in their behavior (Hoza et al., 2004). Thus, PB can be seen as an indicator of (low) motivation for change and engagement in treatment. Hoza and Pelham (1995) studied 44 boys with ADHD who participated in a summer treatment program aimed at training social skills and problem-solving. The children’s ratings of social competence at the beginning of the camp were negatively correlated with the improvement in the trained domains as rated by the counselors who conducted the camp. However, the study did not include an objective comparison to the self-ratings; thus, it is unclear whether the boys actually had biased self-ratings. In another study, Mikami, Calhoun, and Abikoff (2010) investigated 43 children with ADHD who participated in an eight-week summer program designed to improve behavioral and academic functioning and alleviate emotional, social, and other symptoms typically associated with ADHD. Children who overrated their competences compared to the camp counselors’ ratings at the beginning of the program showed poorer response to treatment in terms of conduct problems and social preference as rated by the other children.

To conclude, evidence suggests that PB in children with ADHD is associated with reduced treatment efficacy. However, more studies are needed, especially with older participants, because it is unclear whether the findings from children with ADHD can be generalized to adolescents.

The Present Study

The first goal of this study was to investigate agreements between parent, teacher, and adolescent ratings on symptoms of ADHD and other behavioral symptoms in adolescents with ADHD. In line with prior research, we expected to find low-to-medium correlations between the informants, especially low between teacher and adolescent ratings. We tested this hypothesis with data from a sample of adolescents with ADHD who were enrolled in an intervention. The second goal of the study was to investigate the impact of CID prior to the initiation of a

treatment on treatment outcomes. We expected that CID would impair the efficacy of an intervention. We tested this hypothesis with a subsample from the overall sample consisting of participants who had participated in a specialized intervention for adolescents with ADHD. To the authors' knowledge, this study is the first to test the impact of CID on treatment effects in an adolescent ADHD sample (we prefer the term CID to the term PB because it appears to be less judgmental regarding whether one informant might be wrong or biased).

Methods and Materials

Procedure

In preparation for the study, interventions targeting adolescents with ADHD aged 12–17 years were advertised on the Internet, in local newspapers, pediatric and psychiatric practices, clinics, and schools. In response, parents and adolescents who contacted the outpatient center at the university where the study was to take place were invited to an interview. Here a clinical psychologist conducted an interview including standardized adolescent-, parent-, and teacher-rated ADHD symptom checklists based on the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)* (American Psychiatric Association, 2000; Döpfner & Lehmkuhl, 2006) and the German version of the Wender-Reimherr-Interview (Rösler, Retz-Junginger, Retz, & Stieglitz, 2008) to confirm or rule out an ADHD diagnosis. The study was approved by the Research Board of the Department of Special Education and Rehabilitation, University of Oldenburg, Germany. Parents and adolescents gave their informed consent.

The study was based on data from a randomized controlled trial (RCT; Schramm, Hennig, & Linderkamp, 2016) with three experimental groups (intervention, wait-list control, alternative intervention control) that investigated the effects of an intervention for adolescents with ADHD. To test the first hypothesis, the baseline data of all participants were analyzed. To test the second hypothesis, the data of participants who had received the intervention were analyzed (baseline and posttreatment assessment). During the baseline assessment, the adolescents and their parents decided which teacher should be asked to fill out the questionnaires.

Sample

The overall sample on whom the first hypothesis was tested included 19 girls and 95 boys ($M = 14.0$ years, $SD = 18$

months) with an affirmed ADHD diagnosis. All participants were German citizens with German as their mother tongue, living in or close to a middle-sized university town in Germany. They were predominantly from middle-class families and enrolled in all types of schools in the German school system. Fifty-three adolescents (46%) were on a stable ADHD-related medication (53 methylphenidate, 1 atomoxetine) as prescribed by their pediatrician or child and adolescent psychiatrist. Sixty-one adolescents (54%) were not receiving medication.

The subsample on whom the second hypothesis was tested included 34 participants of the RCT intervention group and 20 participants from the wait-list who had participated in the intervention after their waiting period. Compared to the overall sample, the subsample did not significantly differ in age, gender, and medication. The subsample consisted of 11 girls and 43 boys with a mean age of $M = 14.0$ years ($SD = 17$ months), 25 (46%) were on medication (all methylphenidate), 29 (54%) were not.

Intervention

The German intervention LeJA (Linderkamp, Hennig, & Schramm, 2011) aims to improve academic skills and to enable adolescents with ADHD to cope with actual developmental tasks such as preparing for employment. It is comprised of psychoeducation about ADHD and learning problems, problem-solving training, self-instruction training, and coaching (for a more detailed description, see Hennig, Schramm, Linderkamp, & Koglin, 2016). The intervention is carried out in 16–20 sessions in a one-on-one setting.

In this study, the intervention was implemented by second- and third-year students of special education according to a treatment manual under weekly supervision by two clinical psychologists and a child and adolescent psychotherapist. Parents were invited to three two-hour group psychoeducation sessions. The students' teachers who were asked to participate received informational material and were regularly contacted by phone to monitor the adolescents' behavior at school.

Measures

To assess ADHD symptom severity, parents, teachers, and adolescents completed the ADHD questionnaires from the German Diagnostical System for Psychiatric Disorders in Childhood and Adolescence (DISYPS-KJ; Döpfner & Lehmkuhl, 2006). The DISYPS assesses the ADHD criteria according to the *DSM-IV* (American Psychiatric Association, 2000) with 9 items on inattention and 11 items on hyperactivity-impulsivity. Each item is rated on a 4-point

scale from “never” to “very often.” Mean scores are calculated for the subscales Inattention and Hyperactivity-Impulsivity and for the overall ADHD symptoms. The ADHD questionnaires from the DISYPS have been found to be consistent and reliable (Breuer, Wolff Metternich, & Döpfner, 2009; Döpfner, Görtz-Dorten, & Lehmkuhl, 2008) and valid in relation to other assessments (Erhart, Döpfner, & Ravens-Sieberer, 2008; Görtz-Dorten & Döpfner, 2009). In the current sample, there was good internal consistency for parent-, teacher-, and adolescent-rated inattention ($\alpha = .85-.89$), hyperactivity-impulsivity ($\alpha = .86-.90$), and overall ADHD symptoms ($\alpha = .90-.92$).

To assess students’ emotional and behavioral problems and competencies, parents, teachers, and adolescents completed the Strength and Difficulties Questionnaire (SDQ; Goodman, 1997). The SDQ consists of four scales on problems (emotional, conduct, hyperactivity, and peer problems) and one positive scale (prosocial behavior). Each item is rated on a 3-point scale from “not true” to “certainly true.” Sum scores are calculated for each scale and for an overall “total difficulties score.” For each scale, cut-off scores are reported to assign results to a normal (80% of a comparison sample), borderline (10%), and abnormal (10%) category. The SDQ is a widely used screening instrument with good psychometric properties (Goodman, 2001; Goodman & Goodman, 2009). The internal consistency of the subscales in the current sample cannot be reported because only the scale scores were available. However, prior studies have found all scales of the German SDQ to be reliable and valid in nonclinical and clinical samples, including adolescents with ADHD (Becker, Hagenberg, Roessner, Woerner, & Rothenberger, 2004; Becker, Woerner, et al., 2004).

Statistical Analyses

All analyses were carried out using SPSS 24. To test the first hypothesis, we calculated bivariate correlations to compare each combination of parent, teacher, and adolescent ratings and the intraclass correlation coefficient (ICC) to compare all three ratings simultaneously. To test the second hypothesis, we conducted a hierarchical regression analysis with the posttreatment ADHD score as the dependent variable. In a first step, the pretreatment ADHD score and the possibly confounding variables gender, age, and medication were entered as predictors into the regression. In a second step, the CID score was entered as predictor, and the change in the explained variance from the first to the second step was calculated as an indicator of the magnitude of the effect of CID.

The CID scores were calculated by subtracting the assessment by others (parents/teachers) from the adolescent rating analogous to traditional approaches to estimating

PB (Hoza et al., 2010; Mikami et al., 2010). Thus, positive CID scores indicate an overestimation of competences by the adolescents compared to the rating of others whereas negative scores indicate an underestimation. For the present analysis, CID scores were calculated from the scale with the lowest correlation between adolescent and parent or teacher rating in the baseline data.

Results

Questionnaire data from at least two raters were available for all participants ($N = 114$). Regarding the DISYPS-KJ, parent ratings were complete; 1 adolescent rating (0.9%) and 16 teacher ratings (14.0%) were missing. Regarding the SDQ, parent and adolescent ratings were complete; 15 (13.2%) teacher ratings were missing (teachers who failed to return the questionnaires stated that it was due to lack of time and not related to the student they were asked to evaluate). There were no significant differences in gender, age, medication, ADHD overall severity, and SDQ total difficulties between groups with and without teacher ratings. The ADHD variables were positively skewed except for the parent rating of inattention, which had a negative skew. All SDQ ratings were positively skewed except hyperactivity in the parent and adolescent ratings and prosocial behavior in all ratings that were negatively skewed. There were no extreme values.

Agreement on ADHD Symptoms

Parents evaluated the ADHD symptoms as being more severe than teachers and adolescents (see Table 1). Moderate correlations were found for each pair of raters (parent-teacher, parent-adolescent, adolescent-teacher) and all three raters (parent-teacher-adolescent). Overall, the parent-adolescent correlation was slightly higher than the correlations with the teacher ratings. The parent-adolescent and adolescent-teacher agreement were slightly higher on hyperactivity/impulsivity than on inattention.

Agreement on Other Behavioral Symptoms

Parents generally rated their adolescent’s behavioral and emotional difficulties as being more severe than did teachers and adolescents (see Table 2). The mean SDQ total difficulties score as rated by the parents fell into the “abnormal” category, the teacher ratings fell into the “borderline” category, and the adolescent ratings fell into the “normal” category in relation to the rater-specific cut points. The parent-adolescent correlations were generally higher than the correlations with the teacher ratings. The lowest

Table 1. Severity and cross-informant agreement on ADHD symptoms

DISYPS scale	Parent	Teacher	Adolescent	Parent-Teacher	Parent-Adolescent	Adolescent-Teacher	Parent-Teacher-Adolescent
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>r</i>	<i>r</i>	<i>r</i>	ICC
Symptom severity inattention	2.06 (0.58)	1.53 (0.68)	1.41 (0.67)	.37	.38	.30	.34
Symptom severity hyperactivity-impulsivity	1.20 (0.72)	0.81 (0.71)	0.92 (0.65)	.37	.47	.37	.41
Symptom severity overall	1.57 (0.55)	1.14 (0.61)	1.16 (0.59)	.35	.39	.30	.34

Notes. ADHD = Attention-Deficit/Hyperactivity Disorder; DISYPS = Diagnostical System for Psychiatric Disorders; ICC = Intraclass Correlation Coefficient. All correlations are significant with $p < .05$.

Table 2. Severity and cross-informant agreement on emotional and behavioral problems and prosocial behavior

SDQ scale	Parent	Teacher	Adolescent	Parent-Teacher	Parent-Adolescent	Adolescent-Teacher	Parent-Teacher-Adolescent
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>r</i>	<i>r</i>	<i>r</i>	ICC
Emotional problems	4.23 (2.43)	2.46 (2.15)	2.83 (2.29)	.25	.51	.29	.36
Conduct problems	3.89 (2.16)	2.11 (2.01)	2.54 (1.68)	.38	.55	.26	.39
Hyperactivity	6.69 (2.00)	5.83 (2.42)	5.30 (2.11)	.30	.38	.19 <i>ns</i>	.29
Peer problems	4.12 (2.80)	3.35 (2.95)	3.03 (2.24)	.53	.64	.51	.55
Prosocial	6.89 (1.97)	5.35 (2.89)	7.08 (1.93)	.25	.37	.11 <i>ns</i>	.22
Total difficulties	18.98 (6.26)	13.73 (5.96)	13.68 (5.82)	.36	.58	.29	.42

Notes. SDQ = Strengths and Difficulties Questionnaire. ICC = Intraclass Correlation Coefficient. All correlations are significant with $p < .05$ unless otherwise specified. *ns* = not significant.

agreement was found on prosocial behavior, the only positive SDQ scale.

Impact of Cross-Informant Disagreement on Treatment Effects

CID was calculated by subtracting the teacher rating of prosocial behavior from the adolescent rating of prosocial behavior. The CID scores ranged from -6 to 9 ($M = 1.28$, $SD = 3.28$). ADHD symptom severity as rated by the parents significantly decreased from pretreatment ($M = 1.59$, $SD = 0.52$) to posttreatment ($M = 1.25$, $SD = 0.50$), indicating a medium effect of the intervention ($d = -.65$).

In the first step of the regression, the predictors pretreatment ADHD symptom severity, gender, age, and medication jointly explained 42% of the variance in post-treatment ADHD symptom severity (see Table 3). Pretreatment ADHD symptom severity and gender were significant predictors, whereas age and medication were not. Posttreatment symptom severity was higher in participants with higher pretreatment symptom severity and in girls. In the second step, the CID score was entered into the regression. CID turned out to be a significant predictor, explaining 12% additional variance. In participants with low CID (according to median split), the ADHD symptom severity decreased from $M = 1.56$ ($SD = 0.46$) to $M = 1.10$ ($SD = 0.50$), indicating a large effect ($d = -0.98$). In participants with high CID,

the decrease was from $M = 1.64$ ($SD = 0.58$) to $M = 1.40$ ($SD = 0.47$), indicating a small effect ($d = -0.41$).

We also tested whether teacher and adolescent ratings of prosocial behavior were predictive by entering them as individual predictors into the regression; however, no significant effect was found. Finally, we tested whether the teacher-adolescent discrepancies in total difficulties and in ADHD symptom severity were predictive; again, there was no significant effect.

Discussion

In support of the first hypothesis, we found medium correlations for ratings of ADHD symptoms between all informants. This finding is in line with prior studies that found parent and adolescent ratings of ADHD symptoms to be correlated (Gadow et al., 2002; Hartung et al., 2002) and contrary to Sibley et al. (2012), who found significant correlations only between parents and teachers. As opposed to prior studies (Gadow et al., 2002; Sibley et al., 2012), we also found agreement between teachers and adolescents in the present study. One explanation for this finding might be that in this study, adolescents chose which teacher was asked to fill the questionnaires, as opposed to the study by Sibley et al. (2012), where the teacher of the class in which the adolescent struggled most

Table 3. Prediction of posttreatment ADHD symptom severity (parent rating)

Predictor	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>	ΔR^2	<i>p</i>
Step 1							
ADHD symptom severity pretreatment (parent rating)	0.54	0.10	.56	5.49	< .01		
Gender	0.51	0.13	.41	4.08	< .01		
Age	-0.01	0.01	-.10	-0.99	.33		
Medication	0.12	0.11	.12	1.18	.24	.42	< .01
Step 2							
CID (adolescent-teacher regarding prosocial behavior)	0.05	0.02	.35	3.45	< .01	.12	< .01

Note. ADHD = Attention-Deficit/Hyperactivity Disorder. CID = Cross-Informant Disagreement.

or a randomly chosen teacher provided the rating. Presumably, there would be more agreement with favored teachers than with teachers of challenging classes.

Overall, there was also moderate agreement in the SDQ ratings; however, some differences between the scales emerged. Specifically, parents and adolescents agreed more strongly with each other than they agreed with teachers, in line with prior findings (Becker, Woerner, et al., 2004; Goodman et al., 2010). The agreement was lowest on prosocial behavior, which, in line with the literature (Jia et al., 2016; Linnea et al., 2012; Ohan & Johnston, 2002), indicates that PB is especially strong when social competencies have to be evaluated.

In support of the second hypothesis, CID – as operationalized by the discrepancy between adolescent and teacher ratings on prosocial behavior – was found to diminish the effect of the intervention. Specifically, the regression showed that CID was a predictor of the parent-rated post-treatment ADHD symptom severity even when pretreatment symptom severity, gender, age, and medication were controlled. Parent and adolescent pretreatment ratings of prosocial behavior on their own were no significant predictors of outcome, and the effect of CID held when they were entered into the analysis. This finding corroborates the suggestion by others (De Los Reyes et al., 2015) that discrepancies between ratings have predictive value beyond that of the individual ratings used to assess the discrepancies. The effect size for participants with low CID was more than double that for participants with high CID. Thus, evidence from this study suggests that CID indicates a risk of diminished treatment effects – a finding that has not been shown in an adolescent ADHD sample before.

To conclude, our findings, in line with Mikami et al. (2010), corroborate the notion that CID on competencies such as prosocial behavior indicates a risk of diminished treatment effects in adolescents with ADHD. Adolescents with pronounced CID might not recognize that they have problems and consequently do not acknowledge the need for change. As such, CID may be an indicator of low

motivation to change and engage in treatment, which has been found to be a significant problem in adolescents with ADHD (Bussing et al., 2012).

Based on these findings, therapists should actively engage adolescents with ADHD in treatment planning and try to reach a consensus on treatment modalities. Motivational interviewing might be a promising add-on to standard treatment (Sibley et al., 2016) in this regard.

An alternative or additional explanation of our findings might be that teacher-adolescent disagreement is an indicator of a problematic relationship that negatively affects any improvement gained through the treatment. Problematic teacher-student relationships in secondary school have been found to be related to higher levels of psychiatric disorder three years later, even when initial psychiatric disorders were controlled for (Lang, Marlow, Goodman, Meltzer, & Ford, 2013). Moreover, there is evidence for biases in teachers who tend to hold pessimistic beliefs about the academic skills and expected educational success of students with ADHD (Eisenberg & Schneider, 2007). An important goal, therefore, would be to improve teacher perceptions of students with ADHD and reduce the stigma associated with the disorder (for a more detailed review, see Bell, Long, Garvan, & Bussing, 2011). Our study cannot – and did not aim to – explain the origins of CID and judge who is more or less biased. What the study has shown, however, is that when CID is present, there is a risk of diminished treatment effects.

There are some limitations regarding the study. It was not determined a priori which variables to use for the calculation of CID in the second part of the study. Thus, the findings need replication in an experimental study. Symptoms of inattention predominated in our sample. Although this is typical in adolescent ADHD samples (Sibley et al., 2012), our results may apply particularly to adolescents with symptoms of inattention.

To conclude, professionals working with adolescents with ADHD should consider multiple sources of information before they initiate treatment. CID may indicate a risk of diminished treatment effects and should be addressed in

the planning of an intervention. Motivational interviewing might be a promising add-on to standard treatment (Sibley et al., 2016). Teachers should carefully consider whether their evaluation of students with ADHD might be biased. Psychoeducation can improve knowledge about ADHD, which in turn may help to reduce stigmatization (Fuermaier et al., 2014).

Finally, it should not be forgotten that PB may have a self-protective function (Ohan & Johnston, 2002). Adolescents should be assisted to find alternative ways to build up and protect self-esteem. A promising intervention for adolescents with ADHD is training in adaptive skills (Fabiano, 2014), including organizational, problem-solving, and social skills, as realized in the LeJA intervention (Linderkamp et al., 2011). When successful, training in adaptive skills enables adolescents to cope with real-life problems and developmental tasks, which in turn boosts their self-esteem.

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