ADHD symptoms and the teacher–student relationship: a systematic literature review

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ADHD symptoms and the teacher–student relationship: 
a systematic literature review

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ABSTRACT
This systematic review integrates the existing literature regarding relationships that students with attention-deficit/hyperactivity disorder (ADHD) have with their teachers, in mainstream inclusive primary, secondary and high school settings. Theoretical approaches and methodical choices were considered in understanding the literature and considering possible research areas. The methods used in the reviewed literature show that investigations in this research field have predominantly used quantitative surveys. Several theoretical approaches have been used, with attachment theory the most-prominent. The findings indicate students with ADHD generally feel less close to their teacher than do their non-ADHD peers, which agrees with the teachers’ perceptions. Thus, teachers experience less emotional closeness, less co-operation and more conflicts in their relations with their students with ADHD than with other students. Teachers’ rejection of ADHD students poses a risk factor for not only school failure, but also peer exclusion and rejection, leading to low self-esteem and loneliness.

KEYWORDS
ADHD; school settings; systematic review; teacher–student relationship

Introduction
Attention-deficit/hyperactivity disorder (ADHD) is one of the most common disorders in school-aged children, according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5). The essential features of ADHD are a persistent pattern of inattention and/or hyperactivity and impulsivity more severe than in typically developing children (American Psychiatric Association 2013). These features are associated with both behavioural and academic difficulties (Bussing and Mehta 2013; Sherman, Rasmussen, and Baydala 2008; Sjöwall et al. 2013), which may cause difficulties in forming and maintaining relationships (Kawabata, Tseng, and Gau 2012). In other words, being diagnosed with ADHD clearly introduces a set of risk factors – academically as well as socially – in students’ school interactions (Loe and Fieldman 2007).

The importance of high-quality relationships between teachers and students has been widely investigated (e.g., Camp 2011; Graziano et al. 2007; Hattie 2009; Murray 2002; Nurmi 2012; O’Connor, Dearing, and Collins 2011; Pianta 1999; Roorda et al. 2011). A positive student–teacher relationship (STR) is regarded as a primary prerequisite for learning, in that it builds on a foundation upon which the student’s success (or failure) relies (Camp 2011). However, despite the considerable amount of research to date, the primary focus has been on typically developed students. This may seem conspicuous because high-quality relationships can be assumed particularly important for those with inadequate ability to create and maintain relationships themselves (Rimm-Kaufman et al. 2003).

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A potential explanation for these conditions is that ADHD research may tend to be based on neuropsychiatric approaches (Malmqvist 2018), wherein social factors are not necessarily the focal point. Therefore, the primary aim of the present systematic review is to identify, critically review and synthesise the existing research literature regarding the relationship between teachers and their students with ADHD, in primary, secondary and high school settings. A snapshot of the research field can be created to suggest possible research areas for future research. In doing so, the following research questions were asked: What theoretical approaches dominate the existing research? What methodological approaches tend to permeate the research? What results are to be found in the analysed articles?

**ADHD in inclusive school settings**

Knowledge about ADHD symptoms and their potential impact on students’ learning and social functioning is crucial for both teachers and peers of students with ADHD to avoid those students’ stigmatisation, alienation and lowered self-perception (Gwernan-Jones et al. 2016). However, the literature shows that teachers usually lack knowledge of ADHD (Gwernan-Jones et al. 2016) and how it may affect their students’ social and academic achievement (Ljusberg 2011). Teachers’ knowledge of ADHD is not only crucial towards their ability to make interactional attributions to explain ADHD symptoms, but also to accommodate individual students’ characteristics in interactions, with proportionate expectations within the classroom environment and in their interpersonal relationships. Especially important is teachers’ ability to understand each student’s needs in order to manage them in school settings (Gwernan-Jones et al. 2016). Teachers tend to define hyperactivity together with inattention as the most challenging student behaviour (Birch and Ladd 1998; Kapalka 2008; Nurmi 2012). This also seems to be why teachers experience more conflicts and less closeness to such students than with students who do not exhibit such behaviour. Such behaviour tends to create negative emotions among teachers, often resulting in disciplinary acts (Nurmi 2012). This in turn risks hampering a positive STR. Additionally, Murray and Greenberg (2006) stress that teacher rejection increases the risk of peer rejection for those students.

Classroom contexts often trigger ADHD symptoms when students are required to sit still, be quiet and concentrate. In the students’ trying to do so, their symptoms can worsen, and this can damage the students’ self-perception and self-esteem, as well as their relationships with teachers and peers (Gwernan-Jones et al. 2016; Henricsson and Rydell 2004). Hyperactivity and inattentiveness also seem to be exhibited in low-structured contexts, such as lunch and recess time. These contexts make it hard for students with ADHD to exercise self-control, especially as these settings often incorporate a high level of physical activity that further feeds the students’ hyperactivity and inattentiveness (Kapalka 2008). Behaviour management – such as punitive measures, criticism, negative behavioural sanctions and extensive verbal instructions – is generally ineffective (DuPaul and Weygandt 2006; Hattie 2009; Kapalka 2008). Thus, such negatively oriented interactions toward the students tend to counteract their intent while generally working as a trigger for strong emotions in interpersonal relationships (Hattie 2009) and for those with ADHD in particular (DuPaul and Weygandt 2006). Instead, teachers who communicate with such students sensitively and responsively (Rimm-Kaufman et al. 2003), to facilitate their success tend to have students who live up to higher expectations (Brophy 1996).

**Relationships between teachers and their students with disabilities**

As mentioned, the impact of the STR on typically developed students’ social and academic achievement has been widely researched (e.g., Hattie 2009; Pianta 1999). Amid these studies, the results from Sherman, Rasmussen, and Baydala (2008) indicated that teachers rate students differently based on the teachers’ own characteristics as well as the students’ characteristics. These ratings, in turn, seem to affect their students’ academic achievement and behavioural outcomes. Camp (2011) agreed with Ashworth (1990), who claimed that ‘students are keenly
aware of where they stand in the school community and of how they are perceived by other students and teachers...’ (Ashworth 1990, 26). Hattie’s (2009) research supports this observation by claiming that developing high-quality STRs should be a primary focus for every teacher. That assertion aligns with Nordenbo et al. (2008), who claimed that teachers’ relational competence is vital for their students’ learning. Murray (2002) specifies this in defining high-quality STRs by pointing out the two characteristics of ‘warm’ and ‘demanding.’ These together provide emotional support and access for teachers interested and involved in their students’ lives, together with norms and expectations for students’ achievement and appropriate behaviour (Murray 2002). Thus, teachers’ knowledge of how their relationships with their students affect their students’ behaviour and learning is pivotal in creating accessible learning (Camp 2011). Relationships based on mutual trust, understanding and respect foster students’ achievements (Brophy 1996).

Despite the evident knowledge of STR’s importance for students’ social, emotional and academic achievement, there is limited research on students with disabilities (Prino et al. 2016; Rogers et al. 2015). This is conspicuous, especially because a high-quality STR seems to be of particular importance for students with disabilities (Archambault, Vandenbossche-Makombo, and Fraser 2017; Crum, Waschbusch, and Willoughby 2016; Murray and Pianta 2007) and those at risk of school failure (Roorda et al. 2011). Research in this field can be considered particularly important because a positive STR is associated with students’ academic achievement (Horan et al. 2016), self-efficacy, prosocial behaviours and relations with peers (Chan et al. 2013), which are considered to be areas that students with ADHD experience trouble (Bussing and Mehta 2013; Sjöwall et al. 2013; Sherman, Rasmussen, and Baydala 2008).

Crum, Waschbusch, and Willoughby (2016), together with Archambault, Vandenbossche-Makombo, and Fraser (2017) and Horan et al. (2016), can be seen as some of the very few exceptions in the literature. Crum, Waschbusch, and Willoughby (2016) investigated the role of callous unemotional (CU) traits in understanding the role of STR for students with and without conduct problems (CPs). Their results indicate that relationships between teachers and students with CP are perceived to be less emotionally close and more conflictive than relationships with typically developed students. This seems to be especially true for students with co-morbid CPs and CU. Additionally, low-quality STRs at the beginning of one school year were associated with greater functional impairment and higher levels of oppositional defiant disorder at the end of the school year (Crum, Waschbusch, and Willoughby 2016). These results are in accordance with Henricsson and Rydell (2004), who claimed that troubling STRs often become complicated (Henricsson and Rydell 2004), which results in lower student academic achievement (Horan et al. 2016). In other words, students’ externalising behaviours tend to negatively influence the STR, which results in more conflicts and less closeness (Nurmi 2012), while high-quality STRs work as a protecting factor against students’ behavioural disengagement (Archambault, Vandenbossche-Makombo, and Fraser 2017).

Materials and methods

Methods of synthesis

Data from the articles included in the present analysis were synthesised by broadly following the principles of narrative synthesis (Popay et al. 2006). This was to sum up the different results, which were compared to provide implications for further research. A narrative synthesis is preferable when the included studies contain both quantitative and qualitative studies and, therefore, do not permit specialist syntheses, such as meta-analyses or meta-ethnographic synthesis (Booth, Sutton, and Papaioannou 2016; Popay et al. 2006).
Identification of evidence

To compile this systematic review, a comprehensive search was conducted using multiple databases: LibSearch,\(^1\) ERIC\(^2\) and ASE.\(^3\) This was done to locate and synthesise appropriate research to substantiate the study (Ericsson Barajas, Forsberg, and Wengström 2013). The searches were conducted on 15 November 2018, with the primary search made in LibSearch, supplemented by searches in ERIC and ASE (Table 1).

The LibSearch search was conducted using two clusters of concepts: one associated with ADHD and one describing relationships. The concept search terms used were: ‘attention deficit hyperactivity disorder’ OR ‘attention deficit disorder’ or ‘ADHD’ combined with ‘teacher student relationship’ OR ‘student teacher relationship’ OR ‘teacher pupil relationship’ OR ‘teacher child relationship’ OR ‘teacher student interaction’ OR ‘student teacher interaction’ OR ‘teacher pupil interaction’ OR ‘teacher child interaction’ OR ‘teacher student attachment’ OR ‘teacher pupil attachment’ OR ‘teacher child attachment’. The search terms used in ERIC and ASE were ‘attention deficit hyperactivity disorder’ and ‘teacher student relationship’. By exploding ‘attention deficit hyperactivity disorder’ in ERIC, the search term ‘attention deficit disorder’ was added. When doing the same thing in ASE, two more search terms (‘attention-deficit-disordered children’ and ‘attention-deficit-disordered youth’) could be added. Those terms were then combined with ‘OR’ and the free text search of ‘ADHD’. The term ‘teacher student relationship’ was combined with the free word search (‘student teacher relationship’ OR ‘teacher pupil relationship’ OR ‘teacher child relationship’ OR ‘teacher student interaction’ OR ‘student teacher interaction’ OR ‘teacher pupil interaction’ OR ‘teacher child interaction’ OR ‘teacher student attachment’ OR ‘teacher pupil attachment’ OR ‘teacher child attachment’) in both ERIC and ASE. Retrieved articles were narrowed down by publication period and type (between 2008 and 2018, and scientifically reviewed). This was to ensure that the articles would be current and academically credible (Ericsson Barajas, Forsberg, and Wengström 2013).

The following inclusion and exclusion criteria were used to determine eligibility.

Inclusion criteria

1. Published between 2008 and 2018
2. Peer-reviewed
3. Title, abstract or keywords contain at least one of the terms related to the ‘teacher student relationship’ cluster in the search
4. Title, abstract or keywords contain at least one of the terms related to the ‘attention deficit hyperactivity disorder’ cluster in the search

Exclusion criteria

1. Not conducted in mainstream primary, secondary or high school settings
2. No STR at primary focus
3. No students with ADHD symptoms as primary focus
4. No empirical studies

Analysis

Before the search was narrowed down as indicated above, 334 (LibSearch, 198; ERIC, 85; ASE, 51) articles were identified (Figure 1). Filtering reduced this to 199 (LibSearch, 135; ERIC, 29; ASE, 35). Removal of duplicates further reduced it to 130. The titles, abstracts and keywords were read in the remaining articles to identify articles that did not meet the inclusion criteria. This left 22 articles, which were read in full, and those that met the exclusion criteria were removed. One article was removed because it met the above exclusion criterion 5. A further 11 articles met exclusion criterion 6 and were removed. One of those was, however, an exception (Wiener and Daniels
### Table 1. Systematic search.

<table>
<thead>
<tr>
<th>Database</th>
<th>Thesaurus</th>
<th>Free Text</th>
<th>Search</th>
<th>Number of articles</th>
<th>After filtering</th>
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<tbody>
<tr>
<td>LibSearch</td>
<td>'attention deficit hyperactivity disorder' OR 'attention deficit disorder' OR 'ADHD' AND 'teacher student relationship' OR 'student teacher relationship' OR 'teacher pupil relationship' OR 'teacher child relationship' OR 'teacher student interaction' OR 'student teacher interaction' OR 'teacher pupil interaction' OR 'teacher child interaction' OR 'student teacher attachment' OR 'teacher pupil attachment' OR 'teacher child attachment'</td>
<td>('attention deficit hyperactivity disorder' OR 'attention deficit disorder' OR 'ADHD') AND ('teacher student relationship' OR 'student teacher relationship' OR 'teacher pupil relationship' OR 'teacher child relationship' OR 'teacher student interaction' OR 'student teacher interaction' OR 'teacher pupil interaction' OR 'teacher child interaction' OR 'student teacher attachment' OR 'teacher pupil attachment' OR 'teacher child attachment')</td>
<td>198</td>
<td>135</td>
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<tr>
<td>ERIC</td>
<td>'Attention Deficit Hyperactivity Disorder' 'Teacher Student relationship'</td>
<td>'ADHD' 'student teacher relationship' OR 'teacher pupil relationship' OR 'teacher child relationship' OR 'teacher student interaction' OR 'student teacher interaction' OR 'teacher pupil interaction' OR 'teacher child interaction' OR 'teacher student attachment' OR 'teacher pupil attachment' OR 'teacher child attachment'</td>
<td>((DE 'Attention Deficit Hyperactivity Disorder' OR DE 'Attention Deficit Disorders') OR ('ADHD')) AND ((DE 'Teacher Student Relationship') OR ('student teacher relationship') OR 'teacher pupil relationship' OR 'teacher child relationship' OR 'teacher student interaction' OR 'student teacher interaction' OR 'teacher pupil interaction' OR 'teacher child interaction' OR 'teacher student attachment' OR 'teacher pupil attachment' OR 'teacher child attachment'))</td>
<td>85</td>
<td>29</td>
</tr>
<tr>
<td>ASE</td>
<td>'ATTENTION-deficit hyperactivity disorder' 'TEACHER-Student relationships'</td>
<td>'ADHD' 'student teacher relationship' OR 'teacher pupil relationship' OR 'teacher child relationship' OR 'teacher student interaction' OR 'student teacher interaction' OR 'teacher pupil interaction' OR 'teacher child interaction' OR 'teacher student attachment' OR 'teacher pupil attachment' OR 'teacher child attachment'</td>
<td>((DE 'ATTENTION-deficit hyperactivity disorder' OR DE 'ATTENTION-deficit-disordered children' OR DE 'ATTENTION-deficit-disordered youth') OR ('ADHD')) AND ((DE 'TEACHER-student relationships') OR ('student teacher relationship') OR 'teacher pupil relationship' OR 'teacher child relationship' OR 'teacher student interaction' OR 'student teacher interaction' OR 'teacher pupil interaction' OR 'teacher child interaction' OR 'teacher student attachment' OR 'teacher pupil attachment' OR 'teacher child attachment'))</td>
<td>51</td>
<td>35</td>
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</tbody>
</table>
Even though it did not have STR as its primary focus, the results viewed students’ perceptions of primary conditions for STR, which meant that it was still relevant for the present analysis. Three articles potentially met exclusion criterion 6, and a research colleague was requested to assess them to ensure reliable selection. A further three articles met exclusion criterion 7 and were removed. Finally, one article was removed based on exclusion criterion 8. This left seven articles. One of these articles (Al-Yagon 2016) included students with co-morbid ADHD and learning disabilities, rather than only ADHD, though this article was still considered relevant in the study as these conditions frequently co-exist.

Quality assessment
The remaining seven articles were assessed for quality using a checklist adapted from Croucher et al. (2003) (Table 2), and were deemed to have met the essential quality requirements.

Results
The presented results correspond with purpose and research questions set out for this study.

Theoretical frameworks used in the articles
The findings suggest the articles employed a variety of theoretical frameworks. Two articles used Bowlby’s attachment theory (Al-Yagon 2016; Granot 2016). These articles have some common focal points. Al-Yagon (2016) investigated whether close relationships with parents, teachers and peers can function as predictors of behavioural features for adolescents with co-morbid ADHD and learning disorders, while Granot (2016) investigated how attachment-like relationships between
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<td>2 Theoretical perspective</td>
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<td>4 Context</td>
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<td>5 Sampling</td>
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<td>6 Data collection</td>
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<td>7 Data analysis</td>
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<td>8 Reflexivity</td>
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<td>9 Generalizability</td>
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<td>X</td>
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<tr>
<td>10 Ethics</td>
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</table>

E = essential, D = desirable

Source: Croucher et al. (2003)
(authors granted approval to use)
students with ADHD and their teachers affect the students’ socio-emotional and behavioural adaptation.

Wiener and Daniels (2016) investigated how adolescents with ADHD experience their schooling, broadly using grounded theory as a theoretical framework. Rogers et al. (2015) investigated how ADHD symptomatology affects the STR, using the classroom working alliance model (Toste, Bloom, and Heath 2014), which is based on Bordin’s therapeutic alliance theory.

Three articles lacked a clearly defined theoretical framework (Cook and Cameron 2010; Duarte Santos, Sardinha, and Reis 2016; Prino et al. 2016). Cook and Cameron (2010) investigated inclusive teachers’ interaction (concern and rejection) with their students to examine if any difference could be discerned depending on the individual student’s disability. The authors referred to Fishbein and Ajzen (1975); thus, they presumably based their study on the theory of reasoned action.

Duarte Santos, Sardinha, and Reis (2016) compared four studies in investigating the STR with regard to different disabilities, including ADHD. The theoretical framework is unclear, as in Cook and Cameron (2010), although the authors referred to Ainscow, Booth, and Dyson (2006) regarding why inclusive school theories can be assumed in a possible framework. Prino et al. (2016) did not clearly describe their theoretical framework either, although they refer to Pianta (1999), which made relationship system theory a possible framework.

Methodological approaches in the articles

Five of the seven articles included in this systematic review (Al-Yagon 2016; Duarte Santos, Sardinha, and Reis 2016; Granot 2016; Prino et al. 2016; Rogers et al. 2015) used only quantitative methods. Two used a mixed-methods approach applying both qualitative and quantitative measures (Cook and Cameron 2010; Wiener and Daniels 2016), while none used only qualitative methodology.

Quantitative methods

Surveys served as the quantitative methods used in all the included articles. Four (Duarte Santos, Sardinha, and Reis 2016; Granot 2016; Prino et al. 2016; Rogers et al. 2015) used the Student–Teacher Relationship Scale (STRS) to measure STR quality. The STRS measures teachers’ perception of the STR from the standpoint of conflict, closeness and dependency. Two studies (Al-Yagon 2016; Granot 2016) measured students’ appraisal of their teacher as an attachment figure, using the Children’s Appraisal of Teacher as a Secure Base scale. These studies also measured students’ perception of maternal attachment, using the Attachment Security Scale. Rogers et al. (2015) measured STR quality from both teachers’ and students’ perspectives using the Classroom Working Alliance Inventory questionnaire, which measures bonds, tasks and goals in the STR. Both Granot (2016) and Rogers et al. (2015) measured teachers’ perception of their students’ socio-emotional and behavioural functioning. Granot (2016) used the Teacher–Child Rating Scale, while Rogers et al. (2015) used the Strengths and Difficulties Questionnaire. Duarte Santos, Sardinha, and Reis (2016) and Al-Yagon (2016) measured students’ perceptions of their relationships with peers. Duarte Santos, Sardinha, and Reis (2016) used the sociometric technique to analyse students’ perceptions of their relationships with peers on two levels – acceptance and rejection – while Al-Yagon (2016) used the Friendship Quality Questionnaire to assess students’ perceptions of their relationship with their best friend. Furthermore, Al-Yagon (2016) used the Peer Network and Dyadic Loneliness Scale to measure students’ perceived loneliness, together with the Affect Scale, which measures students’ perceptions of their own externalising behaviour. Students’ emotional and behavioural problems were measured from both students’ and teachers’ perspectives. Al-Yagon (2016) focused on students’ perception and used externalising/internalising scales to assess adolescents’ emotional and behavioural problems. Prino et al. (2016), however, measured students’ levels of hyperactivity, impulsivity and sensitivity from the teacher’s perspective, using the
Simplified Disease Activity Index (SDAI) scale. Rogers et al. (2015) also measured students’ perception of their academic motivation, using the Self-Regulation Questionnaire – academic form.

**Mixed methods**
Cook and Cameron (2010) used mixed methods to examine inclusive teachers’ attitudes of concern and rejection towards their students with disabilities, together with the teachers’ instructional–academic and non-instructional–behavioural teacher–student interactions. That study used the Inclusive Classroom Observation System – a quantified observation measure focusing on the teacher–student interactions – to investigate teachers instructional–academic and non-instructional–behavioural interactions with their students. The teachers were also asked to fill in the Basic Scale of Disability Severity and rate their students using two items: concern and rejection. Wiener and Daniels (2016) used in-depth semi-structured interviews to examine students’ reasoning about the world; this was aimed at obtaining knowledge about each student’s subjective school experience. The students were also asked to complete a friendship questionnaire to describe their social relationships.

**Outcomes from the reviewed articles**
The following examines similarities and differences between findings in the included articles. Please see the Appendix for more information regarding the results from each article.

**Findings from qualitative studies**
Wiener and Daniels (2016) indicated students preferred teachers who understood their disabilities and needs. This included an understanding of possible difficulties in students’ interactions at school, because satisfying school expectations (e.g., paying attention, remaining focused, completing tasks, keeping organised) was an area defined as challenging. The students in that study also indicated the importance of teacher awareness that students with ADHD generally do not deliberately act inappropriately so as to disturb the classroom. The students also emphasised the favourable teacher characteristics of being nice, open-minded, helpful, approachable and easy to talk to. Several students also pointed out the importance of teachers taking charge and being strict when necessary. Further areas highlighted as desirable were teachers enjoying teaching and using a broad pedagogical repertoire. Cook and Cameron (2010) reported higher levels of teachers’ non-instructional behavioural interactions with disabled students than with non-disabled students.

**Findings from quantitative studies**
Rogers et al. (2015) indicated teachers felt less emotionally close to students with ADHD than students without ADHD, regardless of the students’ gender. The same study also reported lower scores on bonds and collaboration compared with those for non-ADHD students. Teachers’ responses indicated they had experienced less-effective co-operation with these students than non-ADHD students. These findings were only partially consistent with the students’ ratings. There was a consensus regarding less closeness and more conflict, although the results from the students’ ratings implied some gender differences. Girls with ADHD reported feeling substantially less emotionally close to their teachers than did girls without ADHD. Boys with and without ADHD, however, did not appear to differ in their feelings of emotional closeness with their teacher. The contrary results from Al-Yagon (2016) indicate there was no difference in students’ perceived attachment to their teachers regarding gender differences. Duarte Santos et al.’s (2016) results also contradicted those of Rogers et al. (2015) by claiming that teachers experience their relationship with boys with ADHD to be more conflictive than with girls with the same diagnosis.

Rogers et al.’s (2015) findings suggesting teachers’ perceptions of themselves as not cooperating as well with students with ADHD match the results from Cook and Cameron (2010), claiming that teachers’ interactions with students who have behavioural difficulties contain
a greater amount of negative remarks. These results are align with findings from Al-Yagon (2016) showing that students with co-morbid learning disorders and ADHD who appraise their teacher to be rejecting them have substantially higher levels of externalising behaviour than do peers with the same disability, though fewer feelings of teacher rejection. At the same time, findings from Prino et al. (2016) suggest that high-quality STRs can serve as protecting factors for students’ problem behaviour. Granot’s (2016) results touch those of both Rogers et al. (2015) and Prino et al. (2016), by identifying the students’ perception of their teacher as a secure figure, along with the teachers’ reports of secure STRs as correlating positively with students’ socio-emotional school strengths. However, Rogers et al. (2015) reported the teachers’ reports of close bonds with these students were not significantly associated with the students’ self-reported motivation.

Rogers et al. (2015) also demonstrated a significant association between students with ADHD symptoms, their academic motivation and experience of close bonds with their teachers. Similarly to in Rogers et al. (2015), the results from Duarte Santos, Sardinha, and Reis (2016) and Prino et al. (2016) indicated teachers experience a correlation between troubled relationships and students with ADHD. Both those studies report that teachers perceive students with ADHD to have significantly higher levels of both dependency and conflict than do their other students. However, the dependency level seems to decrease with the students’ increased educational level (Duarte Santos, Sardinha, and Reis 2016). The teachers’ perceptions of the teacher–student conflict also correlate positively with scores from the SDAI scale measuring impulsiveness and hyperactivity. The results from Prino et al. (2016) align with those from Rogers et al. (2015), showing that the closeness dimension is hampered in relationships between teachers and students with ADHD compared with those with non-ADHD students. Overall, these relationships tend to not only be less-affectionate and warm, but also lack a sense of shared feeling and narration (Rogers et al. 2015), which in turn poses a risk for students’ being rejected by peers, as low-quality STR negatively affects students’ social status among peers (Duarte Santos, Sardinha, and Reis 2016).

**Conclusion**

The conclusions are based on the fact the selected literature includes results from both qualitative and mixed methods. Wiener and Daniels (2016) based their study on 12 participants; this limited population makes it impossible to draw any general conclusions based on relativity and validity. Nevertheless, the results of that study are valuable for developing a deeper knowledge of students’ perceptions. The results of the quantitative studies should be interpreted with caution based on heterogeneity in contexts, student ages, differences in perspectives investigated (teachers or students) and measurements used. In view of these aspects, a conclusion can be made that teachers in general experience less emotional closeness and more conflicts in relation to students with ADHD than with non-ADHD students. This result corresponds with the students’ feelings of teacher rejection, which in turn seems to trigger higher levels of externalising behaviour. Thus, while high-quality relationships between teachers and students with ADHD seem to serve as a protecting factor for externalising behaviour, poor relationships seem to promote CPs and lower academic achievement. While the theoretical frameworks used in the included articles varied, attachment theory was the most prominent.

**Discussion**

This literature review evidently satisfies its objectives, as the results effectively answer the research questions. However, although a thorough search was made of several databases, the results were limited regarding the relationship between teachers and students with ADHD. This is quite surprising because the research areas of ADHD and STR are both well-researched separately (e.g., Bussing and Mehta 2013; Camp 2011; Graziano et al. 2007; Hattie 2009; Murray 2002; Nurmi 2012; O’Connor, Dearing, and Collins 2011; Pianta 1999; Sherman, Rasmussen, and Baydala 2008; Sjöwall
et al., 2013; Roorda et al., 2011). The results indicate an urgent need for further research in this area; as Prino et al. (2016) and Rogers et al. (2015) both also stated. The importance of further research is especially notable because much of the existing literature is based on quantitative methods, which provide statistically significant responses and enable large survey populations, but are not capable of illustrating more in-depth and complex dimensions of the relationship. Nevertheless, Wiener and Daniels’ (2016) differing results are highly interesting because the students themselves can speak and make their voices heard in matters that primarily concern them, without anyone else obtaining interpretative precedence. The students’ way of relating to positive teacher characteristics of being nice, open-minded, helpful, approachable and easy to talk to indicate the importance of teachers being sensitive and responsive in the STR (Rimm-Kaufmann et al., 2003). Students also state the importance of teachers who understand that the students generally are not deliberately acting to disturb the classroom. This result aligns with Gwernan-Jones et al. (2016), who highlighted the importance of teachers’ ability to understand each student’s needs to manage them in the school setting. The results did show some contradictions, which can be explained by the diverse contexts of the studies and the measurements used. However, the results show a consensus regarding limitations in emotional closeness and heightened levels of conflict in relationships between teachers and students with ADHD. This aligns with previous research regarding relationships between teachers and students with disabilities (Crum, Waschbusch, and Willoughby, 2016; Henricsson and Rydell, 2004; Nurmi, 2012), together with the consensus that high-quality relationships between teachers and students with disabilities are to be seen as a protecting factor against students’ behavioural disengagement (Archambault, Vandenbossche-Makombo, and Fraser, 2017). Teachers’ rejection of these students can thus be assumed as a risk factor not only for school failure but also rejection by peers (Murray and Greenberg, 2006), as well as lowered self-esteem and loneliness. Based on these results, high-quality relationships between teachers and students are especially crucial for students with externalising or hyperactive behaviour (e.g., ADHD). Thus, teachers need to acquire more overall knowledge of ADHD, together with knowledge of what impact the disability may have in educational settings. This will help in averting stigmatisation and students’ feelings of rejection.

Limitations and further research

The overarching aim of this study was to synthesise the previous literature on relationships between teachers and students with ADHD, and theoretical frameworks and methods used in the included articles. However, the small sample makes it impossible to draw certain general conclusions. The confinement of searches to educational databases can be considered a limitation because further searches among both medical and psychological databases may have revealed a greater number of relevant studies. Furthermore, although the intent was to write a descriptive narrative overview, the possibility that the interpretations influenced the obtained conclusions cannot be excluded. This lack of qualitative research may be considered a gap that needs closing so that the quantitative research may be deepened and complemented with more data. However, it is notable that six of the seven included articles were written within the last 3 years; therefore, interest in and understanding of the need for further research appears to be increasing.

Notes

1. The Maastricht University search engine application.
2. Education Research Information Center (provided by EBSCO Information Services, Ipswich, MA, USA).
3. Academic Search Elite (EBSCO Information Services).
4. Student-teacher relationship.
5. Attention deficit hyperactivity disorder.
Acknowledgments

This study is part of the Swedish National Research School Special Education for Teacher Educators (SET), funded by the Swedish Research Council (grant no. 2017-06039), for which I am grateful. I extend my sincere thanks to my supervising professors: Mona Holmqvist at Malmö University (Sweden) and Jonas Aspelin at Kristianstad University (Sweden). Further, I want to thank the authorship of the team who conducted the narrative synthesis guidance (Popay et al. 2006) for letting me use the guidance in this article. Finally, I wish to thank Peter Fogarty, MSc., and Adam Goulston, MS, ELS, from Edanz Group (www.edanzediting.com/ac) for editing a draft of this manuscript.

Ethical standards

The author did not perform any studies with human participants in the present study.

Disclosure statement

No potential conflict of interest was reported by the author.

Notes on contributor

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References


## Appendix

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<th>Study</th>
<th>Country</th>
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<th>Sample</th>
<th>Framework</th>
<th>Aim</th>
<th>Method</th>
<th>Measures of STR</th>
<th>Other measures used</th>
<th>Findings relevant for STR\textsuperscript{1} and ADHD\textsuperscript{2}</th>
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</thead>
<tbody>
<tr>
<td>Al-Yagon \textsuperscript{(2016)}</td>
<td>Israel</td>
<td>Journal of Learning Disabilities</td>
<td>280 Israeli high school adolescents’ aged 15–17 (M=15.94) LD\textsuperscript{3} (n = 90) Comorbid LD and ADHD (n =91) Comparison group: TD\textsuperscript{4} (n = 99)</td>
<td>Attachment theory</td>
<td>Examine adolescents’ perceptions of their relationships with significant others to explain variations in socioemotional and behavioural functioning.</td>
<td>Quantitative questionnaire</td>
<td>Children’s Appraisal of Teacher as a Secure Base scale (adolescents’ perceptions of their homeroom teacher as an attachment figure)</td>
<td>Attachment Security Scale (adolescents’ perceptions of security in parent–child relationships) Friendship Quality Questionnaire (adolescents’ perception of their relationship with their best friend) Affect scale (adolescents’ perception of their own affect) Externalising/ internalising syndrome scales (assess emotional problems)</td>
<td>Students with co-morbid LD and ADHD who appraised their teacher as more rejecting of them compared with their non-disabled peers reported significantly higher levels of externalising behaviour than did students with the same diagnosis but lower feelings of rejection. There were no differences in students’ perceived attachment to their teacher with regard to gender differences. Students with co-morbid LD and ADHD reported significantly higher negative affect regarding externalising/ internalising behaviour as well as their peer-network loneliness compared with the LD and TD groups</td>
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</table>

\textsuperscript{1}STR: social, emotional, and relational competence
\textsuperscript{2}ADHD: attention-deficit/hyperactivity disorder
\textsuperscript{3}LD: learning disabilities
\textsuperscript{4}TD: typically developing
<table>
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<th>Findings relevant for STR(^1) and ADHD(^2)</th>
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<tbody>
<tr>
<td>Cook and Cameron</td>
<td>USA (Hawaii and Norway)</td>
<td>Remedial and Special Education</td>
<td>14 general education teachers and 26 included students with disabilities (kindergarten to grade 8). Mild difficulties i.e., LD, BD(^3) or ADD(^6) (n=13) severe difficulties i.e., multiple disabilities (n=13)</td>
<td>Unclear (Theory of Reasoned Action)</td>
<td>Examine the relation between teachers’ attitudinal ratings and teacher–student interaction</td>
<td>Quantitative questionnaire and quantified qualitative observations</td>
<td>Inclusive Classroom Observation System (focusing on teacher–student interactions in five categories: academic, functional, social, behavioural and procedural)</td>
<td>Basic Scale of Disability Severity (teachers’ perceptions). The teachers also rated the truth of two items: 1. “I would like to devote all of my attention to this student because he or she concerns me.” 2. “If my class were to be reduced, I would be relieved to have this student removed”</td>
<td>Teachers’ concern was significantly positively correlated with their teacher-initiated instructional–academic interactions, while their rejection was significantly positively correlated with their one-to-one non-instructional behavioural interactions.</td>
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<tr>
<td>Comparative study</td>
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<td>188 included students with disabilities: LD (n=77) CD(^7) (n=44) ADD (n=20) BD (n=19) and TD students (n=1153)</td>
<td></td>
<td>Examine inclusive teachers concern and rejection ratings towards different groups of students</td>
<td>Same rating scale as used in the valid study regarding teachers’ concern and rejection</td>
<td>Students with LD, CD, ADD and BD received higher concern ratings than did TD students. Students with LD and BD also received higher ratings of rejection than their TD peers. Students with BD also received significantly higher rejection ratings than their CD peers.</td>
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<td>Findings relevant for STR and ADHD²</td>
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<td>Granot (2016)</td>
<td>Israel</td>
<td>Emotional and Behavioural Difficulties</td>
<td>65 dyads of homeroom teachers and their students with difficulties: LD (n=25) ADHD (n=20) Co-morbid LD and ADHD (n=20)</td>
<td>Bowlby’s attachment theory</td>
<td>Examine to what extent maternal attachment and student teacher attachment-like relationships explain socio-emotional adaptations of students with disabilities</td>
<td>Quantitative questionnaire</td>
<td>CATSBY (students appraisal of their teacher as an attachment figure) Student–Teacher Relationship Scale (rated by teachers)</td>
<td>T-CRS (special-subject teachers perceptions of their students socio-emotional functioning) Student socio-economic/family background indicators (rated by students) Students’ attachment security (measure students’ perceived sense of security towards their mothers)</td>
<td>Secure teacher–student relationships reduced students externalising behaviour and increased their ability to learn in to teachers’ perceptions. Students’ perceptions of their teacher as a secure figure correlated positively with students’ socio-emotional strengths.</td>
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<tr>
<td>Prino, Pasta, Giovanna Gastaldi and Longobardi (2016)</td>
<td>Italy</td>
<td>Electronic Journal of Research in Educational Psychology</td>
<td>Three groups: 1. ASD (n=14) and DS (n=18) and their teachers (n=32) together with a control group (n=4) 2. LD (n=108) Divided in 3 Subgroups: EG (n=38) CGI (n=38) CQ ²² (n=32) 3. Students with hyperactive and/or attention deficits (n=112) EG (n=56) CQ (n=56)</td>
<td>Unclear (relationship system theory)</td>
<td>Examine teachers’ experiences of STR with different groups of students with special needs</td>
<td>Quantitative questionnaire</td>
<td>Student–Teacher Relationship Scale (rated by teachers)</td>
<td>SDAI Scale (measures hyperactivity/impulsiveness and distraction) (completed by teachers)</td>
<td>The results indicated teachers found their relationships with students with hyperactivity and/or inattention to be more conflictive and dependent, and less close compared with their relationships with those of other student groups. The hampered feelings of closeness resulted in less warm and affectionate STRS characterised by fewer shared feelings and narrations.</td>
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<tr>
<td>Rogers, Bélanger-Lejars, Toste, and Heath (2015)</td>
<td>Canada and USA</td>
<td>Emotional and Behavioural Difficulties</td>
<td>Students in grades 1–4 ADHD symptoms group (n=35) non-ADHD group (n=36)</td>
<td>Classroom Working Alliance model</td>
<td>Compare teachers’ and students’ ratings of STR in students with high and low levels of ADHD symptoms and examines if students’ academic motivation depends on the STR</td>
<td>Quantitative Questionnaire</td>
<td>Classroom Working Alliance Inventory (assess the STR from both teacher and student perspectives)</td>
<td>Self-Regulation Questionnaire (assess students’ academic motivation) Woodcock–Johnson III Tests of Achievement (control score) Strengths and Difficulties Questionnaire (measures social, emotional and behavioural functioning) (completed by teachers)</td>
<td>Teachers reported feeling less emotionally connected with students with ADHD symptoms. They also reported low levels of co-operation towards goals and shared tasks with these students than with students without ADHD, which agreed with students’ ratings. Girls with high scores for ADHD felt significantly less emotionally connected with their teachers. They also collaborated less with their teachers than did girls without ADHD. ADHD boys did not differ from their peers. Students with ADHD symptoms who reported close bonds with their teachers were significantly related to increased internal motivation. The ADHD group was, overall, characterised by higher teacher ratings regarding conduct problems.</td>
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</thead>
</table>
| Wiener and Daniels (2016)    | Canada  | *Journal of Learning Disabilities* | 12 adolescents with ADHD aged 14-16 | Grounded Theory | Gain knowledge of how students with ADHD experience their schooling | Qualitative interviews       | Quantitative questionnaire              | Friendship questionnaire (to describe students' social relationships) | Three main themes were identified  
1. Support for a Performance deficit.  
2. Social Engagement.  
3. From Dependence to Independence.  
The students described “a good teacher” in terms of “flexible”, “understanding”, “nice to talk to but stern when he/she has to be” and “helpful”. Knowledge about ADHD were considered important in order to avoid stereotyped judgement. |
<table>
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<tr>
<td>Duarte Santos, Sardinha, and Reis (2016)</td>
<td>Portugal</td>
<td>Journal of Research in Special Educational Needs</td>
<td>Examining four studies done in primary school with students aged 6–12 years 1. 20 students with ASD, their classmates (n=304) teachers (n=14) and special teachers (n=10) 2. 13 students with CP, their classmates (n=13) and special teachers (n=13) 3. 21 students with MD, their classmates (n=198), teachers (n=21) and special teachers (n=7) 4. 16 students with ADHD, their classmates (n=244), teachers (n=14) and special teachers (n=8)</td>
<td>Not clear (Inclusive school theories)</td>
<td>Present a comparative reflection between four studies that aim to identify and evaluate relationships between agents in the teaching–learning process and students with different types of SENs</td>
<td>Quantitative questionnaire</td>
<td>Student–Teacher Relationship Scale (rated by teachers and special education teachers)</td>
<td>Sociometric technique (students perception of their relationships with peers in terms of acceptance and rejection)</td>
<td>The conflict subscale indicated teachers perceiving significant higher levels of conflict with students with ADHD compared with other student groups. There was also a negative correlation between boys with ADHD and their teachers, showing these relationships had the highest score on the conflict subscale. These scores also tend to increase with students’ age. The special education teachers perceived students’ dependency level to decrease as educational level increased. Students with ADHD were less preferred by peers, together with students with MD.</td>
</tr>
</tbody>
</table>

1. Student-teacher relationship  
2. Attention deficit hyperactivity disorder  
3. Learning disabilities  
4. Typical development (control group)  
5. Behavioural disorders  
6. Attention deficit disorder  
7. Cognitive disabilities  
8. Autism spectrum disorder  
9. Down syndrome  
10. Experimental group  
11. First control group (same scholastic performance as EG)  
12. Second control group (opposite scholastic performance compared with EG)  
13. Control group (randomly selected students from each class)  
14. Cerebral palsy  
15. Mental disability  
16. Special education needs