Social support, attachment and externalizing behavior in forensic patients with attention-deficit hyperactivity disorder

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ABSTRACT

This study was designed to provide more insight into the relationship between social support and externalizing behavior in forensic patients with ADHD. Because ADHD is highly associated with psychosocial impairment, we expected poor social support and attachment insecurity (i.e., preoccupied, fearful, and dismissive attachment) to be associated with higher levels of externalizing behaviors in forensic patients with ADHD. Self-reports of 32 forensic male outpatients with ADHD (M age = 35.34) were compared with self-reports of healthy (n = 32; M age = 33.84), and 'at risk' control males with (a history of) psychological problems (n = 30; M age = 36.47) from the general population. In addition, associations between social support, attachment and externalizing behaviors (i.e., aggression, antisociality, anger and hostility) were examined within the sample as a whole. Analyses of variance showed that forensic patients with ADHD had higher levels of externalizing behaviors and insecure attachment, and lower levels of secure attachment compared to both healthy and at risk controls. Multivariate regression analyses showed that social support was not associated with any of the externalizing behaviors, after accounting for attachment. In contrast, insecure attachment was associated with higher levels of all externalizing behaviors examined. Finally, insecure attachment best explained antisociality and hostility, suggesting that attachment is more important than other psychopathological risk factors that distinguish the different groups.

1. Introduction

Supportive social relationships have consistently been described as a protective factor against externalizing behavior in sociological, criminological, and psychological theories of offending (e.g., Bowlby, 1973; Cullen, 1994; Hirschi, 1969). Externalizing behavior is an umbrella term including numerous behavioral problems that are often directed negatively at the external environment (e.g., Liu, 2004). Externalizing behavior thus includes oppositional, hostile, or intrusive behavior, but also more severe antisocial behaviors, such as aggression and offending behavior. Support from others can provide affective and instrumental resources, which help individuals cope with adverse life experiences (e.g., Simons et al., 2006), and stimulate social and psychological well-being throughout the life-span. As such, social support can lower the risk of engaging in externalizing behavior (e.g., Baldry & Farrington, 2000; Cullen, 1994; Cullen & Wright, 1997; Meeus, Branje, & Overbeek, 2004). Previous research on adult offenders has shown that higher levels of emotional support are associated with fewer

general and violent rule violations in prison (Jiang, Fisher-Giorlando, & Mo, 2005), and lower levels of hostility after prison release (Hochstetler, Delisi, & Pratt, 2010). Hence, enhancing social support is often an important treatment goal in forensic treatment programs (Ward & Brown, 2004).

Yet, empirical support for the protective role of social support on externalizing behavior in forensic psychiatric patients is mixed (e.g., Bouman, de Ruiter, & Schene, 2010; Jacoby & Kozie-Peak, 1997; Skeem, Eno Louden, Manchak, Vidal, & Haddad, 2009). Forensic psychiatric patients may differ from other offending populations to the extent that they are, by definition, troubled with mental health problems, which are associated with their offending. Regarding the role of social support in forensic psychiatric patients, some studies have indicated that social support is more associated with general well-being than with specific externalizing behaviors (Skeem et al., 2009). It has also been speculated that when many risk factors for externalizing behavior are present in high risk samples, social support is not powerful enough to buffer against these risks (Cusick, Havlicek, & Courtney,

2012). Therefore, forensic psychiatric patients may differ from other offender samples in the extent to which they benefit from social support.

Moreover, within forensic psychiatric patients there is much heterogeneity in terms of psychiatric problems and the extent to which these problems may affect social support. As such, more research is needed on the specific associations between social support and externalizing behavior in different forensic psychiatric samples. In the current study, we focus on forensic patients with Attention-Deficit Hyperactivity Disorder (ADHD; American Psychiatric Association, 2013). Patients with ADHD have an increased vulnerability to social network influences because of poor self-regulation and higher levels of insecure attachment (Storebø, Rasmussen, & Simonsen, 2016). In addition, the core symptoms of ADHD (in particular, impulsivity) and its high comorbidity with other externalizing disorders (e.g., Willcutt et al., 2012; Young, 2007; Young & Thome, 2011) are likely to place forensic psychiatric patients with ADHD at increased risk for offending and impaired social support. In order to understand the role of social support in relationship to externalizing behavior in this high risk sample, we thus argue that risk factors related to ADHD should also be taken into account.

Furthermore, to understand unique associations between social support and externalizing behavior in forensic psychiatric patients with ADHD, we argue that it is pivotal to also consider risk factors for externalizing behavior that are likely to be associated with social support experiences, such as social support seeking, social support availability, and the extent to which patients can benefit from social support. To this end, we examine patients' levels of attachment (in)security.

1.1. Attachment and externalizing behavior

In attachment theory (Bowlby, 1973), it is described that in early interactions with attachment figures, individuals learn how to regulate their feelings, and form prototypical working models of significant others, and the self, which guide future expectations about social relationships. Key features of these attachment representations are (1) whether or not others are experienced as responsive to cries for support and protection, and (2) whether or not the self is concerned as being worthy of this care from others. Serious disruptions in the relationships between caregivers and children can result in a child's distrust and disbelief in the availability and security of (future) others, and insecure attachment behaviors (for example, avoiding closeness in order to protect oneself from getting hurt or becoming disappointed). These negative representations are further expected to impact upon an individuals' emotional and social functioning (Bowlby, 1973). Although the empirical links between early attachment, attachment representations, and psychological functioning are yet to be validated, there is strong support from meta-analyses for a positive association between early insecure attachment behaviors and externalizing behavior in children from healthy and clinical populations (e.g., Fearon, Bakermans-Kranenburg, Van IJzendoorn, Lapsley, & Roisman, 2010). In adults, the empirical support for these links is mainly indirect, and still limited. For example, some work has indicated positive associations between early disruptive experiences with caregivers, insecure attachment in close adult relationships, and increased levels of adult externalizing behavior (Muller, Thornback, & Bedi, 2012).

Furthermore, forensic psychiatric patients are often characterized by histories of early disruptive social experiences (e.g., Van IJzendoorn et al., 1997), which have been reflected in high levels of insecure attachment representations in adulthood (e.g., Frodi, Dernevik, Sepa, Philipson, & Bragesjö, 2010; Levinson & Fonagy, 2004). Levels of attachment insecurity are hypothesized to be strongly associated with externalizing behavior in forensic psychiatric patients. Previous research on general population samples suggests that these associations can be indirect, for example via the influence on (future) experiences of social support (Collins & Feeney, 2004; Vogel & Wei, 2005), or the

impact of attachment insecurity on patients' mental health problems in general (Van IJzendoorn et al., 1997). Yet, attachment insecurity could also be directly associated with externalizing behavior in forensic psychiatric patients. This notion is supported by a recent meta-analysis on attachment and violence (Ogilvie, Newman, Todd, & Peck, 2014), in which the authors showed that forensic psychiatric patients differ from other clinical- and offender samples in the type of attachment *styles* they possess. As such, it was suggested that specific insecure attachment styles are related to both the presence and severity of psychiatric problems in offender populations, and the initiation of more severe violence within forensic psychiatric patients.

Specifically, in adults four attachment styles have been identified (Bartholomew & Horowitz, 1991), from which hypotheses can be formulated on the links between attachment styles and specific problem behaviors. These attachment styles are reflective of a person's current feelings within interpersonal relationships, and are based on a dichotomized view of the internal working models of one's self and other people, as described by Bowlby (1973). *Securely* attached individuals have positive images of both the self and others. Secure attachment is argued to be associated with general mental health, and protects against problem behavior (Mikulincer & Florian, 2003). *Preoccupied* individuals also hold positive views of others, but hold negative views of the self. Individuals with a preoccupied attachment style are constantly striving for self-acceptance by gaining others' approval (Bartholomew & Horowitz, 1991). These individuals are highly focused on their own feelings of distress and their need of others, and therefore are more likely to develop problem behaviors characterized by an internal focus: i.e., internalizing problem behavior (Dozier, Stovall-McClough, & Albus, 2008). Moreover, because externalizing behavior is often disapproved by the environment, engagement in this behavior puts individuals at risk for losing relationships with important others (Hirschi, 1969). Therefore, it can also be argued that for secure and preoccupied attached individuals, externalizing behavior has more negative consequences, making them more likely to regulate negative emotions in different ways.

In contrast, *fearful-avoidant* attached individuals who have negative images of both the self and others, and *dismissive-avoidant* attached individuals who have negative views of others, but positive views of the self, may be more vulnerable to develop externalizing behavior. Both are hypothesized to avoid close relationships with other people, as they fear (fearful) or expect (dismissive) others to disappoint them (Bartholomew & Horowitz, 1991). Dismissive individuals are further assumed to project their negative feelings outward, by defensively turning their attention away from their protected positive self-image, and their lacking need of others (Dozier et al., 2008). As such, dismissive attachment is hypothesized to be most strongly associated with externalizing behavior.

Ogilvie et al. (2014) found some support for this hypothesis, by showing that forensic psychiatric patients were more often classified as being dismissively attached, whereas non-offending psychiatric controls were slightly more often classified as being preoccupied attached. Yet, it is important to note that forensic psychiatric samples are highly heterogeneous in terms of problem behavior, often including individuals with comorbid internalizing and externalizing behaviors. Hence, next to dismissive attachment, high levels of preoccupied, and fearful attachment are also reported in forensic psychiatric samples (e.g., Ogilvie et al., 2014; Timmerman & Emmelkamp, 2006).

1.2. Social support, attachment and externalizing behavior

Attachment styles thus shape individual's self-image, their representations, and expectations of others. In this way, they are likely to have an impact on individual differences in the tendency to rely on others for support (Bowlby, 1973). Specifically, because securely and preoccupied individuals are expected to have positive images of others, they are more likely to rely on others for support than individuals with

fearful or dismissive attachment styles. Attachment styles have also been associated with the way in which social support is interpreted, such that individuals with insecure attachment styles are inclined to perceive social support as more negative (Florian, Mikulincer, & Bucholtz, 1995), in particular when the content of the provided social support is unclear (i.e., can also be experienced as critique or negative feedback; Collins & Feeney, 2004). Finally, it can be argued that experiences of social support further impact an individuals' attachment representations and attachment style, via the development of adjusted views of others and the self. Given these links between social support and attachment styles, it is striking that current knowledge on the combined associations with externalizing behavior is scarce.

To our knowledge only one study examined group differences in self-reported social support and adult attachment between a (non-violent) offending population and healthy controls (Hawkins-Rodgers, Cooper, & Page, 2005). Compared to healthy controls, non-violent offenders reported fewer people from whom they perceived support and less friendships. However, in contrast to what the authors expected, non-violent offenders reported higher satisfaction with this perceived social support, and could more often be classified as being securely attached compared to healthy controls. The authors hypothesized that gender differences between the samples may have contributed to the unexpected findings. Furthermore, the authors noted that these results may not extend to offenders who engage in more serious offense behavior, such as can be expected of forensic patients with ADHD. Non-violent offenders typically committed crimes such as transporting stolen goods, selling drugs, breaking and entering, robbery, and theft (Hawkins-Rodgers et al., 2005), whereas forensic patients with ADHD are more likely to engage in serious, and often violent offending (e.g., Young & Goodwin, 2010; Young, Wells, & Gudjonsson, 2011). Unfortunately, because concurrent variation in externalizing behaviors were not assessed systematically in the study by Hawkins-Rodgers et al. (2005), no conclusion can be drawn about the associations between social support, attachment and externalizing behavior. It thus remains unclear to what extent experienced social support and adult attachment are associated with offenders' concurrent externalizing behavior and previous offending. Similarly, little is known about such psychosocial risk and protective factors for externalizing behavior in ADHD patients.

1.3. Externalizing behavior in ADHD, and the role of social support and attachment

Externalizing behavior in ADHD is often explained by direct associations with ADHD core symptoms, such as impulsivity, and via the high comorbidity between ADHD and other externalizing disorders (e.g., Young, 2007; Young & Thome, 2011).Yet, severe psychosocial impairment is also characteristic for many patients with ADHD (Davidson, 2008). For example, patients with ADHD often lack of social skills and judgement (Weiss & Weiss, 2004). In adults, such impairments are reflected in more marital-, family-, and friendship problems (Eakin et al., 2004; Young, Toone, & Tyson, 2003), and higher levels of self-reported loneliness (Philipsen et al., 2009) compared to healthy controls. Adults with ADHD may therefore perceive lower levels of social support to help them in coping with stressful (life) experiences, including their psychiatric symptoms. In turn, these stressful experiences may further increase the risk to become engaged in externalizing behavior, and to develop internalizing problems as well (Sobanski, 2006).

Higher levels of (different measurements of) insecure attachment have also been reported in patients with ADHD (see for a review; Storebø et al., 2016). In many of these studies, a different approach to the assessment of attachment insecurity has been used than the method of Bartholomew and Horowitz (1991), which is used in the current study. Specifically, these studies support a link between ADHD and disorganized attachment (e.g., Thorell, Rydell, & Bohlin, 2012). Disorganized attachment (and its relationship with externalizing behavior)

has mainly been investigated in children, and shows theoretical resemblance to the fearful-avoidant adult attachment style of Bartholomew and Horowitz (1991) (e.g., Simpson & Rholes, 2002). Both forms of insecure attachment can result in fearful attachment behavior, in which an alternation of both avoidant, and anxious approach strategies in interpersonal behavior can be used. Yet, disorganized attached individuals seem to be more disturbed and incoherent in the alternation of these behaviors. Also, disorganized attachment seems to be a stronger mediator between the experience of early trauma, and engagement in externalizing behavior in adult relationships compared to fearful-avoidant attachment (Rholes, Paetzold, & Kohn, 2016). Therefore, some caution is warranted by using these findings to build hypotheses for the attachment styles investigated in the current study.

In children with ADHD, other measures of insecure attachment, such as poor attachment (to mothers) have also been linked to the development of externalizing behavior (Moneta, Rothhammer, & Carrasco, 2016). Moreover, in a recent study on adolescent offenders, attachment disorder symptoms were found to be related to symptoms of hyperactivity, and to more peer problems as well (Moran, McDonald, Jackson, Turnbull, & Minnis, 2017). In research on adults, there is some support for associations between insecure attachment styles and ADHD in non-offender populations. In two studies it was found that preoccupied and fearful-avoidant attachment styles were most often present in adults with ADHD (Edel, Juckel, & Brüne, 2010; Koemans, Van Vroenhoven, Karreman, & Bekker, 2015). Given that ADHD is in essence often considered as an externalizing disorder, these results may be unexpected. Yet, because high incidences of both internalizing and externalizing problems are reported in adults with ADHD (Jacob et al., 2014), it can be argued that high levels of preoccupied attachment in these samples are indicative of comorbid internalizing problems.

In one of these studies associations between insecure attachment styles and comorbid psychopathology were further examined, and it was shown that patients with ADHD and preoccupied insecure attachment were at higher risk for co-morbid psychopathological problems than patients with ADHD with a secure or dismissive attachment style (Koemans et al., 2015). In that particular study, psychopathology mainly comprised self-reported internalizing problem behaviors. Therefore, different results may be expected in a sample of forensic patients with ADHD.

1.4. Current study

In sum, previous research is inconclusive about the role of social support in externalizing behavior in forensic psychiatric patients. To fill this knowledge gap, we argue that it is important to examine attachment styles, because these styles are strongly associated with externalizing behavior in forensic psychiatric patients (Ogilvie et al., 2014). Moreover, attachment styles are likely to affect patients' experiences of social support. Forensic patients with ADHD are expected to engage in severe externalizing behavior (Young et al., 2011). Although the elevated risk for externalizing behavior in ADHD patients might be explained by psychosocial risk factors, such as social problems, and insecure attachment problems, currently there is little empirical support for this notion. In this study, we therefore compared forensic patients with ADHD with a matched control group from the general population, and examined associations between social support, attachment styles and externalizing behavior within the whole sample as well.

We hypothesized that forensic psychiatric patients with ADHD report lower levels of social support compared to healthy controls, and higher levels of externalizing behaviors (i.e., aggression, antisociality, anger, and hostility). In addition, because we expected insecure attachment styles to be positively associated with externalizing behavior, we hypothesized that forensic psychiatric patients with ADHD report more insecure attachment (i.e., preoccupied, fearful, and dismissive

attachment) and less secure attachment compared to controls. Moreover, in examining unique associations between social support, attachment styles, and externalizing behaviors in the whole sample, we expected both social support and attachment styles (and in particular dismissive attachment) to be uniquely related to externalizing behavior. Finally, we hypothesized that these associations are stronger in forensic psychiatric patients with ADHD than in controls, because multiple risk factors related to ADHD and externalizing behavior are likely to interact in this group of patients.

2. Material and methods

2.1. Participants

2.1.1. Forensic patients with ADHD

Forensic patients with ADHD were recruited from a forensic outpatient center in the Netherlands. Inclusion criteria were male gender, being 18 years or older, having an ADHD diagnosis, and no diagnosis of intellectual disability. Except for intellectual disability,[1] other (comorbid) diagnoses were no exclusion criteria in this study. In the outpatient center, patients with ADHD receive treatment for their psychiatric disorder(s) and related aggressive or delinquent behavior in different phases. After a diagnostic phase, patients receive psychoeducation for ADHD and its relationship with externalizing behavior, followed by cognitive-behavioral therapy for aggressive or other delinquent behavior, and schema-focused therapy targeted at personality problems, if indicated. Patients can skip treatment phases if indicated. Also, patients are offered 'side modules' including pharmacotherapy, practical support for social-, financial-, work related-, or daily routine-problems, and treatment for substance-related disorders if applicable. Patients are either treated compulsory as part of a juridical measure, or they are in treatment voluntarily after referral by a general practitioner or other mental health care professional. All patients are at risk for coming into contact with the legal justice system (again), because of engagement in serious externalizing behavior. As such, the main goal of treatment in the forensic outpatient center is to reduce risk for (re-)offending.

Thirty-two Dutch forensic outpatients with ADHD (*M* age = 35.34, *SD* = 8.93, range = 19–53) participated in this study. All patients, except for one, were diagnosed with one or more comorbid psychiatric disorder(s), and/or personality problems. Comorbid psychiatric disorders most often included externalizing disorders: in particular, addiction (18), and other impulse control disorders (10). Comorbid internalizing disorders included Post-Traumatic Stress Disorder (1), anxiety disorders (3), and mood-related disorders (5). Also, three patients had a Pervasive Developmental Disorder Not Otherwise Specified. Regarding personality problems, 15 patients were diagnosed with cluster B personality disorder or traits. Finally, one patient was diagnosed with Paranoid Personality Disorder, one with an Unspecified Personality Disorder, and one with cluster C personality traits.

Only 4 patients received mandatory treatment. Other patients were in treatment voluntarily due to their aggressive behavior. Of the patients who received treatment voluntarily, 17 had been into contact with the legal justice system in the past. Of note, 11 patients were included during a pilot study, and therefore most of them were already receiving treatment at the outpatient center for a longer period of time (i.e., *M* treatment duration in days = 507.09, *SD* = 674.16; range = 49–2339). The other patients were included in this study during, or shortly after they finished the diagnostic phase and started

treatment in the forensic outpatient center (i.e., *M* treatment duration in days = 147.62, *SD* = 110.46; range = 49–566; *see Section 2.2 for the exact procedure*). Group comparisons of these two patient groups using independent sample *t*-tests showed patients did not differ on any of the study variables of interest. Nevertheless, there was much variability in patients' treatment phase. Five patients were included during or right after the diagnostic phase, and 16 were receiving psychoeducation for ADHD and externalizing behavior. Four patients were already receiving cognitive-behavioral therapy for aggressive or other delinquent behavior, 2 were receiving schema-therapy for personality problems, and 4 others were receiving long-term psychological-, or pharmacological "maintenance" therapy in order to keep their treatment progress stabilized. Of note, at time of data assessment 17 patients received psychotropic medication for ADHD (i.e., 11 patients), and/or comorbid disorders.

2.1.2. Control group(s)

By means of convenience sampling, a control group of 110 Dutch males was recruited from the general population by Psychology undergraduates and graduates. Of this sample, a subsample of 32 healthy matched controls (*M* age = 33.84, *SD* = 9.98, range = 18–55) was selected based on age, educational level, and when possible, marital status. Because we wanted to control for the presence of psychiatric problems (and specifically, ADHD) within the control group, participants were asked whether they were currently receiving treatment or had received treatment for mental health problems in the past. Of the 110 participants, 32 participants reported that they were currently in treatment, or had been in treatment in the past. From these 32 participants, we excluded two persons. One person was excluded because he was diagnosed with ADHD, the other one because he had received treatment for delinquent behavior in the past. The remaining 30 participants (*M* age = 36.47, *SD* = 11.06, range = 20–56) reported current (i.e., in the case of 10 participants) and past (i.e., 20 participants) mental health problems that ranged from milder insecurity issues and anxiousness, to more serious anxiety problems, trauma, and depression. One participant reported having a Borderline Personality Disorder. Finally, another participant reported being suicidal in the past. We used the data of these 30 participants to form an additional control group, reflecting an 'at risk' sample for the development of (more severe) psychiatric problems within the general population.

2.2. Procedure

The current study was part of a larger study aimed at examining patient and contextual factors associated with externalizing behavior and treatment motivation in forensic patients with ADHD. This study was *conducted in accordance with the American Psychological Association's ethical guidelines and approved by the local Institutional Ethical Review Board at our university.* When patients met the inclusion criteria, and there were no major objections for participation (such as having a psychotic episode, or being in crisis), therapist were asked to invite patients to participate after they (had almost) finished the diagnostic phase in order to indicate their treatment plans. Patients who were interested in participating received an information letter about the study's aim and procedure, and were contacted to plan a research appointment at the outpatient center. Patients were informed that participating in the study was voluntarily and that they could withdraw from the study at any given moment, without any reason. Participation included one research appointment of approximately 2 h, including a 15 minute break.

Prior to data collection, patients signed written informed consent. Data collection included participating in three computer tasks and filling out a number of self-report questionnaires together with one of the researchers. Patients received a gift voucher for their participation of either 5, 10 or 15 euro's based on their performance on one of the computer tasks, and an additional gift voucher to reimburse their

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[1] *Note.* After data collection was finished, we learned that one patient with ADHD was later also diagnosed with Mild Intellectual Disability. Because this patient did not seem to have more difficulty with understanding the study materials than the other participants, we decided not to exclude him from the current study.

travelling expenses. Data collection took place from October 2017 to March 2018. In addition, due to difficulties with including patients in the study, the current study also made use of data collected during a pilot study. The pilot study was conducted in the period from January 2016 until April 2016. The procedure of the pilot study mostly differed from that of the original study in terms of patient inclusion, such that in the pilot study, we also included patients who already were receiving treatment at the forensic outpatient center for a longer period of time. Also, during the pilot study patients were asked to fill-out the standardized questionnaires by themselves.

2.2.1. Control group

Participants in the control group were informed that they participated in a study on impulsivity and social relationships. Data collection took place at participants' homes. In contrast to the patient group, participants of the control group filled out the self-report questionnaires by themselves, but students were present to answer questions when needed. Participants from the control group did not receive a standard gift voucher for their participation, but competed with each other over one gift voucher of 15 euro's based on their scores on one of the computer tasks. The person with the highest score won the gift voucher.

2.3. Measures

2.3.1. Social support

In order to assess social support, participants were first asked to list (a maximum of 10) network members who played an important role in their lives at that moment. Of these network members, several demographic characteristics and criminogenic risk factors were assessed (i.e., presence of own mental health problems, offense history). Thereafter, participants were asked to indicate to whom of these network members they would like to turn to for support, in case they would have a problem; to whom of these network members they would actually turn to for support in case they had a problem; on whom of these network members, they wished that they could always count on, no matter what; and, on whom of these network members they could actually always count on, no matter what. Participants' social support scores were computed by summing the number of listed network members for each of these four questions, and dividing this number through the total number of network members that were listed as playing an important role in participants' lives at the moment. As such, higher scores on the social support scale, indicated higher levels of (proportional) perceived social support as provided by the most important network members of each participant. The reliability of the total scale including the four questions ($\alpha = 0.84$) proved to be sufficient in this study.

2.3.2. Attachment

Attachment styles were measured with the Attachment Styles Questionnaire (ASQ; Van Oudenhoven, Hofstra, & Bakker, 2003), which aims to assess adult attachment from a general perspective. That is, the questionnaire is not developed to measure specific attachment styles within particular relationships (such as attachment to parents), but includes general statements about relationships with other people, such as: "I find it relatively easy to get close to others", "I do not really feel safe in forming close relationships, because I fear I will get hurt", and "I am afraid that I will get disappointed when I become too close to others". Participants indicated on a five-point scale (1 = *strongly disagree* to 5 = *strongly agree*) to what extent they agreed with the statements. By averaging the items, four attachment style scales were computed: including, secure (8 items; $\alpha = 0.75$), preoccupied (7 items; $\alpha = 0.84$), fearful (5 items; $\alpha = 0.83$), and dismissive attachment (4 items; $\alpha = 0.61$). Higher scores on each attachment scale indicated higher levels of the particular attachment style. The ASQ takes a dimensional approach to attachment, assuming that individuals can have higher scores on more than one attachment style. The questionnaire is thus not suited for classifying individuals into one particular style of attachment. The ASQ has been shown to have sufficient reliability and construct validity in research on the general population (Van Oudenhoven et al., 2003).

2.3.3. Externalizing behaviors

Externalizing behaviors were assessed with two questionnaires. These included four items of the Impulsive Antisociality scale creation of the International Personality Item Pool – NEO inventory (Witt, Donnellan, & Blonigen, 2009) to measure antisociality ($\alpha = 0.69$). The Impulsive Antisociality scale includes items such as "I take advantage of other people", and "I obstruct other people's plans", which are rated on a four-point scale (1 = *completely disagree* to 4 = *completely agree*). In addition, a short form of the Aggression Scale (Bryant & Smith, 2001; Buss & Perry, 1992) was administered to assess self-reported (verbal and physical) aggression (6 items; $\alpha = 0.83$), anger (6 items; $\alpha = 0.86$), and hostility (3 items; $\alpha = 0.83$). The Aggression Scale includes items such as "Sometimes, I cannot suppress the tendency to hit someone", and "I have difficulty keeping my composure", which are rated on a five-point scale (1 = *completely disagree* to 5 = *completely agree*). Higher mean total scores on the scales were indicative of more self-reported externalizing behavior. The psychometric properties of both scales have been shown sufficient in previous research on clinical samples (e.g., Hornsveld, Muris, Kraaimaat, & Meesters, 2009; Witt et al., 2009).

2.4. Statistical analyses

First, descriptive analyses were conducted to examine score distributions and missing values. Three participants of the at risk control group had missing data on social support and were therefore excluded from the analyses including this variable. Second, group differences on background characteristics were explored using independent sample *t*-tests, and Fisher's exact tests. Moreover, correlations between the study variables were examined. Because almost none of the dependent and independent variables were normally distributed (i.e., except for secure, preoccupied, and fearful attachment), correlations were calculated with these variables by using Spearman's rho instead of Pearson's correlations (Field, 2009). Third, group differences on social support and attachment styles, and group differences on externalizing behaviors were tested respectively, using two multivariate analysis of variance (MANOVA). We corrected for multiple hypotheses testing using the Holm-Bonferroni method (Gaetano, 2013; Holm, 1979). When significant group differences were found in the multivariate analyses, these were further explored using univariate analyses of variance (ANOVA). Also, because almost none of the dependent and independent variables were normally distributed, we performed bootstrapping (Russel & Dean, 2000) on the ANOVA's and the regression analyses.

Fourth, eight multiple hierarchical regression analyses were conducted in order to examine the unique associations between social support, attachment, and externalizing behaviors (i.e., aggression, antisociality, anger and hostility) within the whole sample. In all analyses, the first step included main effects of group (consisting of two dummy variables; forensic patients with ADHD and at risk controls, healthy controls served as the reference group) and social support. In the second step, attachment styles were included, and in the third step, two-way interactions between social support and group, and attachment styles and group were included to test whether the associations between social support, attachment, and externalizing behaviors differed between groups. All continuous independent variables were mean centered in order to reduce problems with multicollinearity (Kraemer & Blasey, 2004). Because of the limited sample size and the subsequent power issues, we tested the interactions between social support and group, and attachment styles and group on externalizing behaviors in separate hierarchical regression analyses. Finally, when significant interaction effects were found, we calculated simple slopes for the different groups using the Process macro for SPSS (Hayes, 2013).

Table 1
Background characteristics of forensic ADHD patients and controls, and bivariate correlations within the entire sample ($N = 94$).

	Healthy controls ($n = 32$)		At risk controls ($n = 30$)		Forensic ADHD patients ($n = 32$)			F(2,91)
Age M (SD)	33.84 (9.98)		36.47 (11.06)		35.34 (8.92)			0.54
Education n (%)								
Low	17 (53.1)		10 (33.3)		19 (59.4)			Fisher's exact test = 4.67
Moderate	12 (37.5)		16 (53.3)		10 (31.3)			
High	3 (9.4)		4 (13.3)		3 (9.4)			
Marital status n (%)								
Single	10 (31.3)		12 (40.0)		13 (40.6)			Fisher's exact test = 9.42*
Married/relationship	22 (68.8)		14 (46.7)		13 (40.6)			
Divorced/other	0 (0.0)		4 (13.3)		6 (18.8)			
Network members M (SD)	5.03 (2.31)		5.10 (2.44)		5.56 (2.86)			0.41
	1.	2.	3.	4.	5.	6.	7.	8.
1. Social support	–							
2. Secure attachment	0.31*	–						
3. Preoccupied	−0.05	−0.20	–					
4. Fearful	−0.20	−0.68**	0.45**	–				
5. Dismissive	−0.15	−0.23*	−0.10	0.40**	–			
6. Aggression	−0.14	−0.34*	0.03	0.39**	0.58**	–		
7. Antisociality	−0.22*	−0.27*	0.14	0.24*	0.40**	0.52**	–	
8. Anger	−0.18	−0.38*	0.47**	0.46**	0.52**	0.76**	0.50**	–
9. Hostility	−0.11	−0.33*	0.57**	0.54**	0.11	0.27*	0.22*	0.36**

* $p < .05$.
** $p < .001$.

3. Results

3.1. Descriptive analyses

Results of the descriptive analyses and correlations are reported in Table 1. Groups did not differ in age, educational level, or number of network members listed in the social support questionnaire. Results of the Fisher's exact test showed that groups differed on marital status ($p < .05$). Compared to healthy controls, forensic patients with ADHD and at risk controls reported more often to be single. Healthy controls were more often married or in a relationship at the time of the study.

Regarding correlations within the whole sample, social support was positively related to secure attachment, and negatively related to antisociality. Secure attachment was negatively related to all externalizing behaviors, whereas preoccupied attachment was only (positively) related to hostility. Also, fearful attachment was positively related to all externalizing behaviors, whereas dismissive attachment was positively related to aggression, antisociality, and anger.

3.2. Group differences in social support, attachment styles, and externalizing behaviors

To test group differences in social support, attachment, and externalizing behaviors, we conducted two MANOVA's. Results of the multivariate analyses indicated significant differences between groups in the model examining social support and attachment styles combined (Pillai's Trace = 0.50, $F = 5.66$, $df = (10,170)$, $p < .001$, $\eta_p^2 = 0.25$), and the model examining all externalizing behaviors together (Pillai's Trace = 0.62, $F = 10.03$, $df = (8178)$, $p < .001$, $\eta_p^2 = 0.31$). As such, we interpreted the results of the follow-up univariate analyses to identify on which of the individual variables group differences were significant.

Results of the univariate analyses showed that groups differed in all attachment styles and externalizing behaviors, but not in social support (see Table 2). In line with the first hypothesis, post-hoc analyses using bootstrapping showed that forensic patients with ADHD reported lower levels of secure attachment, higher levels of all three insecure attachment styles, and higher levels of all externalizing behaviors compared to healthy controls. Similar results were found for comparisons between forensic patients with ADHD and at risk controls, except these groups did not differ on secure and preoccupied attachment, or on hostility.

3.3. Unique associations between social support, attachment styles, and externalizing behaviors

Results of the hierarchical regression analyses using bootstrapping are reported in Table 3. Findings from Step 1 showed a negative main effect of the at risk controls and a positive effect of forensic patients with ADHD on aggression. This suggests that compared to healthy controls, at risk controls reported lower levels of aggression, whereas forensic patients with ADHD reported more aggression. In Step 2, attachment styles were added to the model. Results showed that dismissive attachment was positively related to aggression within the whole sample, indicating that higher levels of dismissive attachment were associated with more aggression. Finally, in Step 3, we examined two-way interactions between group and attachment styles yielding a significant interaction between group and preoccupied attachment on aggression (i.e., sr^2 forensic patients with ADHD = 0.05; $sr2$ at risk controls = 0.02). Simple slopes analyses showed that there was a negative association between preoccupied attachment and aggression for healthy controls (b slope = −0.60, $SE = 0.16$, CI 95% [−0.91; −0.29]; see Fig. 1a), such that when levels of preoccupied attachment increased, self-reported aggression decreased. For forensic patients with ADHD and at risk controls, no significant association between preoccupied attachment and aggression was found (i.e., b slope forensic patients with ADHD = 0.29, $SE = 0.22$, CI 95% [−0.16; 0.73]; b slope at risk controls = 0.02, $SE = 0.21$, CI 95% [−0.39; 0.43]).

Regarding associations with antisociality, main effects in Step 1 showed that social support was negatively associated with antisociality. This indicated that the more social support participants perceived, the lower their levels of self-reported antisociality were. Furthermore, there was a positive main effect of forensic patients with ADHD, indicating that this group reported more antisociality than healthy controls. Yet, when attachment styles were controlled for in Step 2, main effects of social support and group were no longer significant. Instead, only dismissive attachment was positively related to antisociality within the sample as a whole. Hence, participants who were more dismissively attached, reported more antisociality. Findings from Step 3 yielded no significant interaction effects between group and attachment styles on antisociality.

Next, we tested the models for anger. Similar to the previous outcomes, forensic patients with ADHD reported more anger than healthy controls (see Step 1). In Step 2, higher levels of dismissive attachment

Table 2

Results of the MANOVA's of social support and attachment, and externalizing behaviors (N = 94).

	Healthy controls (n = 32)		'At risk' controls (n = 30)		Forensic ADHD patients (n = 32)		F (2,88)
	M (SD)	95% CI	M (SD)	95% CI	M (SD)	95% CI	
Social support	0.73 (0.18)	−0.25; −0.02	0.61 (0.25)	−0.17; 0.12	0.59 (0.30)	0.48; 0.68	2.89
Attachment							
Secure	3.87 (0.67)[b]	−0.85; −0.19	3.65 (0.68)[ab]	−0.64; 0.04	3.34 (0.67)[a]	3.12; 3.58	4.98*
Preoccupied	2.15 (0.61)[a]	0.65; 1.42	2.95 (0.81)[b]	−0.15; 0.69	3.19 (0.91)[b]	2.87; 3.49	14.66**
Fearful	2.44 (0.79)[a]	0.71; 1.56	2.84 (0.78)[b]	0.34; 1.12	3.58 (0.88)[c]	3.25; 3.86	16.04**
Dismissive	3.26 (0.64)[a]	0.25; 0.92	3.29 (0.64)[a]	0.23; 0.90	3.86 (0.70)[b]	3.61; 4.10	8.62**

Externalizing behavior M (SD)		95% CI	M (SD)	95% CI	M (SD)	95% CI	F (2,91)
Aggression	2.18 (0.87)[b]	0.64; 1.47	1.76 (0.68)[a]	1.12; 1.86	3.24 (0.83)[c]	2.95; 3.54	28.81**
Antisociality	1.45 (0.53)[a]	0.16; 0.68	1.45 (0.40)[a]	0.17; 0.64	1.85 (0.55)[b]	1.67; 2.05	6.85*
Anger	1.98 (1.00)[a]	1.04; 2.07	2.20 (1.04)[a]	0.78; 1.87	3.53 (1.13)[b]	3.15; 3.91	20.07**
Hostility	1.91 (0.86)[a]	0.89; 1.94	2.76 (1.11)[b]	−0.08; 1.14	3.31 (1.27)[b]	2.87; 3.75	13.40**

Note. Superscripts a, b, c show significant differences between the groups based on the results of the post hoc multiple comparisons using bootstrapping.
Note. The reported 95% confidence intervals for healthy and at risk controls are the parameter estimates of the mean differences compared to the Forensic ADHD patients.
* p < .05.
** p < .001.

Table 3

Regression analyses of social support, attachment styles and externalizing behaviors using bootstrapping (N = 91).

	Aggression		Antisociality		Anger		Hostility	
	B (SE)	95% CI	B (SE)	95% CI	B (SE)	95% CI	B (SE)	95% CI
Step 1. R²	0.39**		0.17*		0.34**		0.23**	
Constant	2.67 (0.30)		1.75 (0.16)		2.42 (0.41)		2.02 (0.35)	
At risk group	−0.52 (0.19)*	−0.89; −0.16	−0.05 (0.13)	−0.32; 0.20	0.05 (0.28)	−0.48; 0.64	0.77 (0.26)*	0.23; 1.28
Forensic ADHD	0.97 (0.21)*	0.53; 1.34	0.35 (0.13)*	0.09; 0.61	1.47 (0.28)*	0.87, 2.01	1.38 (0.27)*	0.79; 1.89
Social support	−0.68 (0.37)	−1.58; 0.05	−0.42 (0.19)*	−0.82; −0.05	−0.61 (0.51)	−1.54; 0.40	−0.16 (0.46)	−1.04; 0.82
Step 2. Δ R²	0.15**		0.10*		0.14*		0.22**	
Constant	2.49 (0.30)		1.71 (0.17)		2.20 (0.42)		2.46 (0.34)	
At risk group	−0.51 (0.17)*	−0.89; −0.15	−0.10 (0.14)	−0.36; 0.18	0.10 (0.27)	−0.38; 0.67	0.29 (0.25)	−0.19; 0.80
Forensic ADHD	0.51 (0.23)*	0.05; 1.00	0.16 (0.17)	−0.17; 0.51	1.05 (0.30)*	0.46; 1.64	0.50 (0.33)	−0.15; 1.17
Social support	−0.31 (0.37)	−1.34; 0.41	−0.21 (0.21)	−0.62; 0.22	−0.05 (0.53)	−1.06; 0.98	−0.11 (0.40)	−0.88; 0.70
Attachment								
Secure	−0.28 (0.14)	−0.55; 0.01	−0.20 (0.11)	−0.44; 0.00	−0.22 (0.19)	−0.62; 0.16	0.12 (0.19)	−0.26; 0.50
Preoccupied	0.08 (0.12)	−0.27; 0.24	0.11 (0.08)	−0.04; 0.26	−0.11 (0.16)	−0.42; 0.22	0.42 (0.16)*	0.12; 0.73
Fearful	−0.02 (0.12)	−0.27; 0.20	−0.13 (0.10)	−0.36; 0.05	0.18 (0.19)	−0.20; 0.56	0.54 (0.20)*	0.14; 0.90
Dissmissive	0.53 (0.11)*	0.29; 0.73	0.26 (0.10)*	0.08; 0.46	0.50 (0.18)*	0.12; 0.86	−0.15 (0.21)	−0.63; 0.20
Step 3. Δ R²	0.09*		0.07		0.07		0.08	
Attachm × at risk								
Secure	0.49 (0.36)	−0.26; 1.12	0.08 (0.27)	−0.48; 0.63	0.71 (0.59)	−0.41; 1.87	0.12 (0.49)	−1.92; 1.10
Preoccupied	0.62 (0.27)*	0.18; 1.23	−0.35 (0.20)	−0.77; 0.05	0.71 (0.39)	−0.09; 1.46	0.52 (0.39)	−0.19; 1.32
Fearful	0.20 (0.31)	−0.46; 0.72	0.22 (0.30)	−0.33; 0.82	−0.12 (0.66)	−1.31; 1.24	−0.11 (0.54)	−1.17; 0.94
Dissmissive	0.11 (0.31)	−0.38; 0.86	−0.25 (0.29)	−0.90; 0.23	0.39 (0.52)	−0.67; 1.28	−0.69 (0.47)	−1.67; 0.16
Attachm × F ADHD								
Secure	0.44 (0.32)	−0.21; 1.05	0.00 (0.29)	−0.62; 0.50	1.21 (0.44)*	0.44; 2.45	0.77 (0.44)	−0.18; 1.62
Preoccupied	0.88 (0.26)*	0.33; 1.37	−0.15 (0.19)	−0.56; 0.21	0.19 (0.37)	−0.60; 0.86	0.03 (0.37)	−0.74; 0.73
Fearful	0.42 (0.31)	−0.18; 1.04	0.32 (0.23)	−0.20; 0.75	0.62 (0.43)	−0.20; 1.48	0.77 (0.44)	−0.02; 1.65
Dissmissive	0.06 (0.34)	−0.80; 0.53	−0.30 (0.26)	−0.92; 0.14	0.25 (0.47)	−0.89; 0.91	−0.30 (0.51)	−1.52; 0.50

'At risk' = 'at risk' control group, Attachm = attachment, F ADHD = forensic ADHD patients.
Note. 'At risk' and Forensic ADHD are dummy variables with healthy controls serving as the reference group.
Note. The two-way interactions between social support and groups on externalizing behaviors are not reported in this table, because none of these interactions were significant.
* p < .05.
** p < .001.

were found to be related to more anger in the entire sample. Finally, results of Step 3 suggested that there was a significant interaction between forensic patients with ADHD and secure attachment on anger (sr^2 = 0.04). Results of the simple slopes analyses showed a negative relationship between secure attachment and anger for healthy controls (b slope = −0.97, SE = 0.27, CI 95% [−1.50; −0.43]; see Fig. 1b), such that when levels of secure attachment increased, self-reported

anger decreased. For forensic patients with ADHD, the relationship between secure attachment and anger was not significant (i.e., b slope = 0.24, SE = 0.31, CI 95% [−0.38; 0.87]).

Finally, we tested the model for hostility. Findings from Step 1 showed that both forensic patients with ADHD and at risk controls reported higher levels of hostility than healthy controls. Again, when controlled for attachment in Step 2, these group differences were no
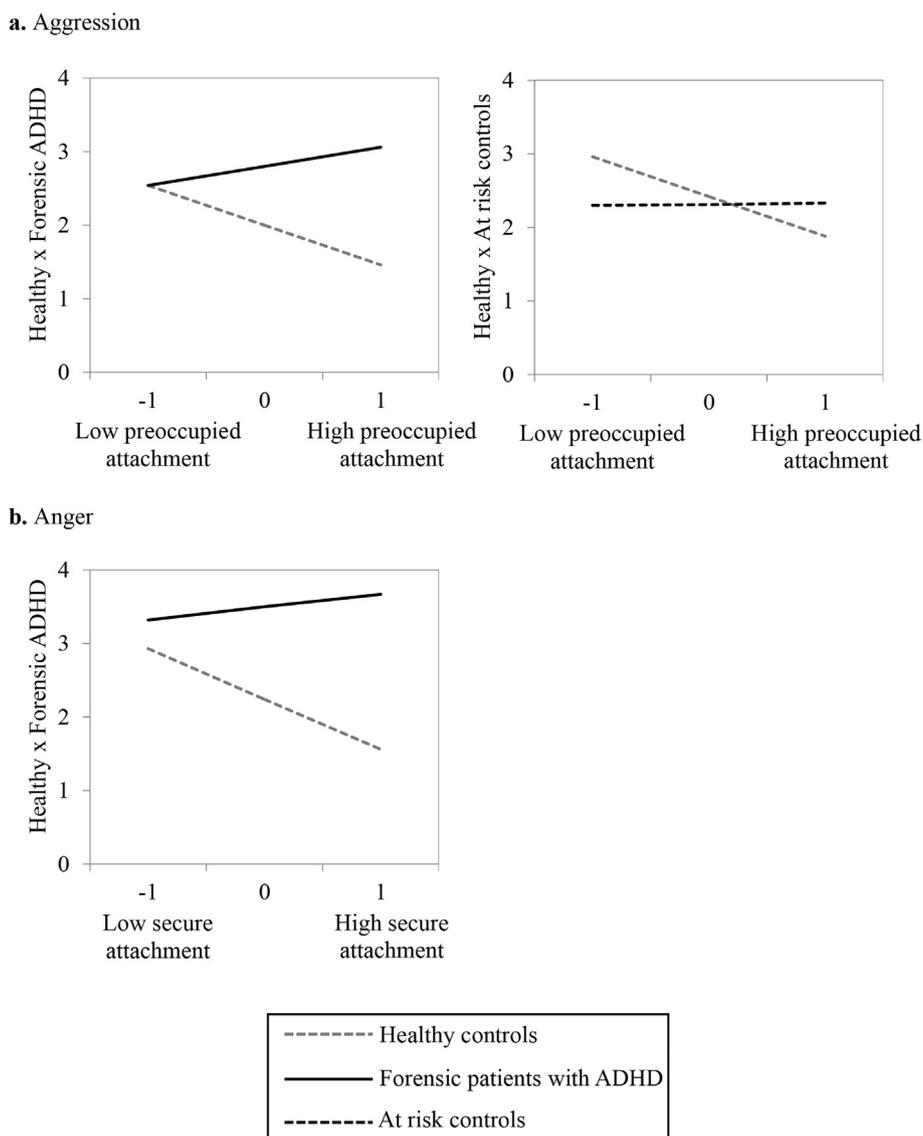
a. Aggression

b. Anger

Fig. 1. Interactions between groups and attachment on externalizing behavior.

longer significant. Results of Step 2 further showed that both pre-occupied and fearful attachment were positively associated with hostility in the entire sample. Hence, the higher participants' self-reported preoccupied and fearful attachment, the higher their self-reported hostility. Interactions between attachment and group in Step 3 were not significant. Moreover, no significant interaction effects were found in the models examining two-way interactions between group and social support on any of the externalizing behaviors.

4. Discussion

This is the first study to examine associations between social support, attachment styles and externalizing behavior in forensic patients with ADHD. Consistent with previous research, our findings provided support for the notions that ADHD is associated with externalizing behavior and psychosocial impairment, including insecure attachment (i.e., preoccupied, fearful, and dismissive attachment), but not to poor social support. In line with our hypotheses, findings indicated that forensic patients with ADHD have higher levels of externalizing behaviors and insecure attachment, and lower levels of secure attachment compared to both healthy and (to a lesser extent) psychiatrically at risk controls. In general, insecure attachment was associated with higher

levels of externalizing behaviors, including aggression, antisociality, anger, and hostility. Moreover, for antisociality and hostility, insecure attachment seemed to be a better predictor than risks inherent to (forensic) ADHD. Finally, we found no support for associations between social support and externalizing behavior when accounting for attachment.

Specifically, multivariate regression analyses showed that controlled for social support and group, only dismissive attachment was positively related to more antisociality. In contrast, hostility was only positively associated with higher levels of both fearful and preoccupied insecure attachment, indicating that having a negative view of the self is associated with more hostile cognitions. These findings highlight the important role that insecure attachment can play in mental health problems. This is striking, given that in many treatment programs, discussing or adjusting patients' attachment patterns is not yet an explicit treatment goal.

Implicitly, attachment insecurity in treatment has received much scientific and clinical attention. For example, patients' insecure attachment is recognized to complicate the forming of a healthy therapeutic alliance, which in turn, is associated with poorer treatment progress (Martin, Garske, & Davis, 2000; Meyer & Pilkonis, 2001; Satterfield & Lydodon, 1998). It is therefore key that therapists help

patients' overcome attachment difficulties, but this process is often described as going through specific ways of interacting with the patient, and thus through the therapeutic relationship itself (see for example; Pearlman & Courtois, 2005). Whether therapists succeed in overcoming these difficulties then also depends on characteristic related to the therapist, such as own attachment style, warmth, and ability to empathize with patients (e.g., Lambert & Barley, 2001). We therefore argue that approaches for targeting insecure attachment in treatment can be improved by standardization. Future research may want to expand on this idea and examine whether and how attachment styles can be targeted in treatment explicitly.

Furthermore, similar to previous studies on clinical and offending samples (Ogilvie et al., 2014), our findings supported the idea that in particular dismissive attachment is associated with externalizing behavior. Hence, of the four attachment styles, only higher levels of dismissive attachment were related to more aggression and anger. Dismissive attachment thus seems to be a general risk factor for externalizing behavior, relevant to forensic patients with ADHD, and healthy and at risk controls.

In contrast to our hypotheses, groups neither differed in social support, nor was social support related to externalizing behavior when accounting for group and attachment styles. Although results on antisociality indicated that social support was negatively associated with antisociality, this relationship was not significant when attachment was taken into account. We argue that this might explain some of the mixed findings in previous studies on the role of social support in forensic psychiatric patients, as it illustrates that accounting for individual factors associated with social support may lead to different conclusions. Alternatively, the way in which we assessed social support may have biased the current findings regarding the relationship with externalizing behavior. In this study, social support mostly reflected the availability of social support. However, it has been suggested that not social support availability, but rather social support *quality* is associated with fewer externalizing behavior in forensic psychiatric patients (Skeem et al., 2009). In contrast, other work showed that social support availability is also positively related to certain risks for externalizing behavior, such as substance use (Spohr, Suzuki, Marshall, Taxman, & Walters, 2016).

Our finding that forensic patients with ADHD did not differ in perceived social support from healthy and at risk controls, can be explained in several ways. First, it can be argued that this indicates that in general, people tend to rely on a relatively small number of close network members (i.e., on average, < 5) for support. This is in line with research on 'core discussion networks', which suggests that people generally rely on about 2 network members to discuss important personal matters with (De Cuyper, Dirkzwager, Völker, Van der Laan, & Nieuwbeerta, 2012; McPherson, Smith-Lovin, & Brashears, 2006). Second, it is possible that the control groups were less in need of others' support than forensic patients with ADHD, and therefore reported a small number of network members on whom they rely on for support (i.e., similar to the number reported by forensic patients with ADHD). Yet, if needed, controls may have more people within their network to whom they can actually turn to for support. Finally, our results may have been influenced by small differences in assessment of social support between samples. Patients with ADHD filled-out the social support questions together with a researcher, whereas the control groups filled these questions out by themselves. Because participants were asked to answer questions about every network member that they listed, participants from the control groups may have listed fewer network members to save time and thus may not reflect their full social support network. In contrast, forensic patients with ADHD may have felt more pressure to list more network members.

Counter to our hypothesis, neither social support, nor attachment styles were more strongly associated with externalizing behaviors in forensic ADHD patients compared to control groups. Instead, only attachment styles were differently associated with externalizing behavior

between groups. Specifically, higher levels of preoccupied and secure attachment styles in healthy controls were associated with lower levels of aggression and anger, respectively. As such, it can be argued that these attachment styles can protect healthy individuals from engaging in these externalizing behaviors. Yet, these results should be interpreted cautiously, as we did not formulate hypotheses about these interactions and effect sizes of these interactions were small.

Finally, comparing the three groups on attachment and externalizing behaviors, there were some additional findings which were not hypothesized prior to data analyses. We found that although forensic patients with ADHD had higher levels of all insecure attachment styles and externalizing behaviors compared to healthy controls, forensic patients did not differ from at risk controls in hostility and preoccupied attachment. Because it has been suggested that preoccupied attachment is more strongly associated with internalizing behavior (Dozier et al., 2008), the latter finding might reflect the fact that forensic patients with ADHD and at risk controls show some overlap in internalizing problems. In particular, because self-reported mental health symptoms of at risk controls, most often comprised internalizing symptoms, such as anxiety and mood related disorders. Alternatively, together with our finding that preoccupied attachment was only positively associated with hostility when controlled for group and social support, these findings can also indicate that hostility in part comprises internalizing behavior. In this study, higher levels of hostility included cognitions related to bitterness and ill will (Bryant & Smith, 2001), but participants had not necessarily acted upon these cognitions.

Our findings should be interpreted against the backdrop of several study limitations. First, because results were based on cross-sectional data, it is possible that poor social support and insecure attachment were the result of severe externalizing behavior. In particular, this might have been the case for forensic patients with ADHD, because their offending might have led to the loss of social contacts in the past. Second, because we only made use of self-reports, the data might have been subject to social desirability responding (Van de Mortel, 2008). Again, social desirable responding was most likely for forensic patients with ADHD, because they filled out the questions together with a researcher. Third, we made use of the Attachment Style Questionnaire (Van Oudenhoven et al., 2003) to assess adult attachment styles. As noted, this instrument assesses attachment styles from a dimensional perspective, so that individuals can score high on more than one of the attachment styles. Hence, we examined associations with externalizing behavior for individuals scoring higher or lower on a particular style of attachment, which is different from previous studies on attachment and psychopathology in which participants were classified as being either securely, or insecurely (preoccupied, fearful, or dismissive) attached (e.g., Ogilvie et al., 2014; Storebø et al., 2016). This should be kept in mind when interpreting the current findings on the role of attachment in explaining externalizing behavior. Fourth, because of the small sample size and limited statistical power, we were unable to adequately test for associations with small effect sizes (Cohen, 1992). Future studies should therefore replicate these findings in larger samples.

Moreover, because of the small number of participants in each group, we could not examine associations between social support, attachment and externalizing behavior within groups. Particularly within forensic patients with ADHD, this might have yielded different results, because psychiatric and psychosocial problems are highly heterogeneous within these patients (Scully, Young, & Bramham, 2014; Willcutt et al., 2012).Future research may want to examine this further, and additionally, focus on how social support and different attachment styles interact in their relationship with externalizing behavior. That is, it can be argued that for patients with higher levels of secure attachment, social support can buffer against externalizing behavior, whereas for individuals with higher levels of insecure attachment this is not the case. A final limitation concerns the fact that we included forensic patients with ADHD who were receiving treatment for a longer period of time, which may have affected our findings. Patients who have

received treatment for some time are expected to have learned to better regulate emotions and (externalizing) behavior. Yet, comparing these patients with patients who just entered treatment, showed no difference in self-reported externalizing behaviors or on any of the other variables of interest.

5. Conclusions

To sum up, we showed that insecure attachment styles are associated with externalizing behavior. For some externalizing behaviors, this association existed above and beyond the relationship with other psychopathological risk factors that distinguished the different study groups. In particular, dismissive attachment was a risk factor for externalizing behaviors in both control groups and forensic patients with ADHD. Preoccupied and fearful attachment were related to more hostility, whereas social support was not associated with externalizing behavior in these samples. Although replication is needed, these findings underline the importance of insecure attachment and its association with particular problem behavior. At the very least, our findings call for more awareness in forensic psychiatric care regarding the finding that enhancing social support might not always be enough to reduce externalizing behaviors for insecurely attached patients. Rather, we suggest that extra attention should be given to the way in which patients view themselves and others, perceive and experience emotions in interpersonal relationships, and the extent to which they are able to trust and rely on others if needed.

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