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Cross-Setting Correspondence in Sociometric Nominations Among Children With Attention-Deficit/ Hyperactivity Disorder

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Abstract

Peer problems are common among children with emotional and behavioral disorders (EBD). However, the extent to which children's peer functioning varies across settings is unknown, as is the incremental power of peer functioning in different settings in predicting subsequent psychopathology. Participants were 57 children with Attention-Deficit/Hyperactivity Disorder (ADHD) who had peer sociometric nominations collected in general education classrooms and a Summer Treatment Program (STP) with all-EBD peers. Significant, small-to-medium correlations existed between nomination rates across settings. Lower rates of STP positive nominations and higher rates of STP negative nominations (but not classroom nominations) predicted exacerbated self-reported depression and antisocial behavior 1 year later. Lower rates of STP positive nominations, but higher rates of classroom positive nominations, predicted increased self-reported depression 2 years later. For children with high rates of classroom positive nominations, higher rates of STP positive nominations predicted reduced parent-reported internalizing behavior 1 year later. For children with low rates of classroom negative nominations, higher rates of STP negative nominations predicted increased teacher-reported externalizing behavior 1 year later and self-reported depression 2 years later. Results suggest that sociometric nominations collected within an EBD peer group may have stronger predictive power for later adjustment than nominations collected in a mainstream classroom.

Keywords

ADHD, peer relationships, sociometric nominations, psychopathology

Children with emotional and behavioral disorders (EBD) are well-documented to have impairments in their peer relationships (Gresham, Cook, Crews, & Kern, 2004). Peer difficulties are especially pronounced for youth with Attention-Deficit/Hyperactivity Disorder (ADHD), which is a common condition among children identified as having EBD in school or mental health settings (Egger & Angold, 2006). For instance, children with ADHD have lower social preference than do children with other EBDs such as depression (Asarnow, 1988). In the Multimodal Treatment Study of Children with ADHD (MTA; MTA Cooperative Group, 1999), the effect size for social preference between youth with ADHD and peers from the same general education classrooms of youth with ADHD was $d = -1.17$ (Hoza, Mrug, et al., 2005).

These peer problems are concerning because they exacerbate children's risk of adverse adjustment outcomes in adolescence and adulthood. In the MTA sample, the extent to which children with ADHD received negative sociometric nominations predicted increased cigarette smoking, depression, and overall global impairment 6 years later, after statistical control of childhood levels of these same problems as well as ADHD symptom severity (Mrug et al., 2012). Teachers' reports of the extent to which classroom peers rejected the participants with ADHD were related to impaired social skills among the children with ADHD, which in turn predicted exacerbated peer rejection as well as

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internalizing and externalizing psychopathology at subsequent assessment points (Murray-Close et al., 2010). Research in other samples has similarly found that childhood peer problems and ADHD status had additive effects on increased substance abuse, delinquency, depression, academic failure, and eating pathology 5 years later (Greene, Biederman, Faraone, Sienna, & Garcia-Jetton, 1997; Mikami & Hinshaw, 2006; Mikami, Hinshaw, Patterson, & Lee, 2008). This literature underscores the importance of peer problems among children with ADHD.

A common assessment measure of peer problems is a sociometric procedure wherein children's peers nominate them for positive (like most, wish to be around, want to be friends with) and negative (do not like, do not wish to be around, do not want to be friends with) criteria. The number of positive and negative nominations that each child receives from peers can then be tallied (Coie, Dodge, & Coppotelli, 1982), and children who receive high rates of negative nominations and/or low rates of positive nominations are considered to have difficulties with peers. Positive and negative sociometric nominations are important indices of peer problems that have strong incremental validity in predicting subsequent psychopathology (Gest, Graham-Bermann, & Hartup, 2001; Parker & Asher, 1987).

Despite the established importance of sociometric nominations for adjustment, the EBD literature has been inconsistent about the setting in which sociometrics are obtained. In parallel, there has been inadequate consideration of whether a given child's sociometric nominations in one setting might differ from nominations obtained in another setting, with potentially meaningful implications for psychopathology. Children with EBD commonly participate in general education classrooms and specialized clinical settings (e.g., residential treatment, day treatment, self-contained special education classrooms), making relevant the question of consistency between peer functioning across these settings.

Crucially, existing studies assume that rates of sociometric nominations should be highly correlated across settings, such that children's nominations in *any* setting would reliably reflect their nominations in other settings. This assumption may be at least partially valid, given how robustly children with ADHD are disliked in studies where nominations are collected in general education classrooms (Hoza, Mrug, et al., 2005), summer programs (Blachman & Hinshaw, 2002; Erhardt & Hinshaw, 1994), and small playgroup settings (Hodgens, Cole, & Boldizar, 2000). As well, evidence suggests that similar problem behaviors among children with ADHD (e.g., aggression) are positively associated with peer rejection in all-ADHD as well as regular classroom peer groups (Mrug, Hoza, Pelham, Gnagy, & Greiner, 2007). Yet, the setting in which sociometric nominations are collected, and the characteristics of the peers providing nominations, may nonetheless affect the rates of nominations obtained.

Literature suggests that the correlation between children's disruptive behavior and sociometric peer rejection varies slightly across classroom settings, depending on the extent to which peers have group norms against disruptive behavior (Stormshak, Bierman, Bruschi, Dodge, & Coie, 1999). Such peer group norms may be affected by the peer group composition. In peer groups where disruptive behavior is uncommon (less normative), there may be a stronger association between disruptive behavior and sociometric peer rejection (Wright, Giammarino, & Parad, 1986). Consistent with the idea that peer group composition influences sociometric nominations, children with ADHD seem to be slightly more lenient than comparison children in the extent to which they make negative sociometric judgments about other ADHD peers (Blachman & Hinshaw, 2002; Hinshaw & Melnick, 1995), although importantly, children with ADHD and comparison children overwhelmingly dislike peers with ADHD. Other literature finds that peer group norms are influenced by teacher practices. Specifically, teachers who censure and show displeasure with children who display disruptive behavior may augment the association between disruptive behavior and sociometric peer rejection in their classrooms (Chang et al., 2007; Mikami et al., 2013; Mikami, Griggs, Reuland, & Gregory, 2012). Taken together, this literature calls into question the consistency of sociometric nominations across settings.

To our knowledge, the correlation between the same children's sociometric nomination rates in different settings remains largely unknown. We are only aware of one study that has directly examined this question. Among a sample of 15 children with EBD receiving inpatient psychiatric treatment, Zakriski and Prinstein (2001) found correlations of $r = .52$ for positive nominations and $r = .57$ for negative nominations between inpatient and general education classroom settings. Within the ADHD literature, Hodgens et al. (2000) found that children with Combined Type ADHD (ADHD-C; $n = 15$) and Inattentive Type ADHD (ADHD-I; $n = 15$) were more disliked by peers relative to comparison children ($n = 15$) in a playgroup (composed of four or five previously unacquainted children) as well as in their regular school classrooms. However, although the correlations between children's playgroup and classroom sociometric nominations were not reported, the authors noted that they were not significant (Hodgens et al., 2000).

As previously stated, peer problems are known to augment children's risk of subsequent maladjustment. Previous research documenting predictive links between poor sociometric functioning and exacerbated psychopathology using ADHD or EBD samples has sometimes relied on sociometric nominations collected in the child's regular school classroom (Farmer & Hollowell, 1994; Mrug et al., 2012) but other times used nominations collected in summer day programs for children with ADHD (Blachman & Hinshaw, 2002; Erhardt & Hinshaw, 1994; Mikami et al., 2008;

Mikami & Hinshaw, 2006) or in an inpatient unit for children with EBD (Zakriski & Prinstein, 2001). However, it is unknown whether nominations assessed in two settings would have additive or interactive effects in predicting psychopathology over and above nominations obtained in only one setting. Research has found that consistently being peer-rejected across school years (where probably some but not all classmates remain constant) predicts exacerbated maladjustment relative to being intermittently rejected (DeRosier, Kupersmidt, & Patterson, 1994), suggesting the potential for additive negative effects of poor sociometric functioning in different settings. Nonetheless, if the peer group norm in one setting rewards behavior problems but the peer group norm in another setting devalues behavior problems, it is possible that peer acceptance in the first setting might predict exacerbated maladjustment, whereas peer rejection in the second setting would predict maladjustment. In sum, it remains unknown whether the relative predictive power of sociometric nominations on subsequent psychopathology differs based on the setting in which nominations are obtained or the characteristics of the nominating peers.

Study Aims and Hypotheses

Using a sample of children with ADHD-C, our objective was to examine the correspondence between children's sociometric nominations in their regular school classrooms and parallel nominations received in a Summer Treatment Program (STP). The STP is a behavioral intervention delivered in an 8-week summer day camp to children in classrooms of all-ADHD peers. None of the children's classroom peers overlapped with their STP peers.

Because peer rejection of children with ADHD has been found (in independent samples) to occur in classroom (Hoza, Mrug, et al., 2005), summer program (Blachman & Hinshaw, 2002; Erhardt & Hinshaw, 1994), and small playgroup settings (Hodgens et al., 2000), and because similar problem behaviors in children with ADHD appear to predict peer rejection in STP as well as classroom settings (Mrug et al., 2007), we predicted a positive correlation between rates of sociometric nominations received in the classroom and in the STP. Yet, we hypothesized that discrepancies across settings would exist, leading to a small to medium correlation overall, based on evidence that peer group norms (which should be influenced by the different peer composition and teacher values in each setting) help to determine peer sociometric nominations (Mikami et al., 2012; Mikami et al., 2013; Wright et al., 1986). Because peer difficulties as assessed in regular classroom and ADHD summer program settings have been found (in different samples) to exacerbate psychopathology (Mikami & Hinshaw, 2006; Mrug et al., 2012), we hypothesized that STP and classroom nominations would incrementally contribute to explaining children's future internalizing and externalizing behavior.

Method

Participants

Participants were 57 children (45 boys, ages 7.0–9.9 at study enrollment). They represented a subsample of the MTA, a six-site randomized clinical trial involving 579 children meeting full diagnostic criteria for ADHD-C using a rigorous procedure involving parent and teacher reports and a clinical interview (Hinshaw et al., 1997). Among the 57 participants in the current study, 24 had comorbid diagnoses of Oppositional Defiant Disorder and 9 had diagnoses of Conduct Disorder. All MTA participants were randomly assigned within site to one of four treatment arms: multi-component behavior therapy (Beh)—of which the STP was part, medication management (MedMgt), the combination of Beh and MedMgt (Comb), or referral to self-selected usual community care (CC). Treatments in the first three conditions were administered by study personnel for 14 months after which all families proceeded to naturalistic follow-up (Arnold et al., 1997).

The 57 participants in the current study were selected from the larger MTA sample as follows: First, only youth enrolled at two of the six sites (Pittsburgh and Berkeley) were eligible, because only these two sites collected sociometric data during the STP and in regular classrooms (doing so was optional in the MTA). Second, only youth who had been randomized to the Beh or Comb treatment arms within these two sites were eligible, as enrollment in these arms was necessary for children to receive the STP. However, the 57 participants in the current study did not differ significantly from the remaining MTA children with ADHD on age, ethnicity, gender, parental marital status, maternal or paternal education, or income (all ps > .10).

Procedure

Parents provided informed consent and children provided assent, and approval for all procedures was obtained from university review boards and local school administrations. Children were enrolled in the MTA over a 6-month window of time during a given winter/spring (January–June; median = March) and they began their 14-month active treatment period on enrollment. Therefore, study participants had received somewhat varied amounts of treatment by the time the STP began. The current study used sociometric data collected (a) at the end of the STP, approximately 3 to 6 months into the active treatment period, and (b) in the child's classroom, collected at approximately 11 to 14 months of the active treatment period. We selected measures of baseline psychopathology (considered as covariates) that were collected as close as possible in time to the STP and classroom sociometrics. We therefore used psychopathology measures collected at either Month 9 during the active treatment period or at the 14-month,

post-treatment assessment (97% retention rate of the originally enrolled sample), depending on when the relevant measures were administered in the MTA design.

Because the assessments of STP sociometrics, classroom sociometrics, and baseline psychopathology measures all occurred at slightly different times, there is the possibility that scores were influenced by children's receipt of varied amounts of treatment at the time the measure was taken. Although we cannot definitively rule out this possibility, we note previously published MTA analyses suggesting that the Comb condition, but not the Beh condition, was superior to CC in reducing ADHD and oppositional symptoms and adult-informant reported internalizing behavior at the 14-month assessment point (MTA Cooperative Group, 1999). However, neither Comb nor Beh was superior to CC for the dependent variable of classroom sociometrics at the 14-month assessment after a correction for multiple comparisons was applied (Hoza, Gerdes, et al., 2005), and sociometrics have been shown to be quite treatment-refractory overall (Whalen et al., 1989). Yet, Comb was superior to Beh for the dependent variable of STP sociometrics (Pelham et al., 2000). Collectively, this evidence suggests that baseline values on psychopathology and, to a lesser extent, sociometric measures may have been influenced by the amount of treatment received at the point that the measure was taken in the Comb condition, but the possibility is less likely in the Beh condition.

Subsequent outcome measures of psychopathology were collected at the 24-month assessment occurring almost 1 year into the naturalistic follow-up period (93% retention rate) and the 36-month assessment occurring nearly 2 years into the naturalistic follow-up period (84% retention rate). Previous articles report that there were no significant differences between those children retained versus not retained at 24-month (MTA Cooperative Group, 2004) and 36-month follow-up points (Jensen et al., 2007). The superiority of the Comb treatment condition over CC with respect to ADHD and oppositional symptoms was substantially reduced in magnitude at the 24-month assessment and not present for the outcome variables of internalizing behavior and social skills (MTA Cooperative Group, 2004). There were no significant differences between either Comb or Beh and CC on ADHD symptoms, oppositional behavior, or adult-informant reported internalizing behavior and social skills at the 36-month assessment (Jensen et al., 2007). Therefore, treatment received is unlikely to have influenced scores on psychopathology outcome measures taken at the 24- and 36-month assessment points.

Measures

STP sociometric nominations. In the final week of the STP (corresponding to approximately Month 3–6 of the 14-month treatment period, as noted above), children nominated up to three peers in their STP group who were their "best friends" (positive nominations) and with whom they were "*not* friends" (negative nominations); see Pelham et al. (2000). Altogether, there were 13 STP groups, each containing 11 or 12 children with ADHD (some of whom were not part of the MTA sample), and all STP group members participated in sociometric nominations. The totals of positive and negative nominations each child received were converted into *z*-scores within the child's STP group.

Classroom sociometric nominations. Approximately 11 to 14 months into the treatment period, a similar sociometric procedure was administered in participants' regular school classrooms. Children were asked to indicate an unlimited number of same-sex peers in their classroom who were their "best friends in the class" (positive nominations) and those with whom they "*do not* want to be friends" (negative nominations). All participants in the current study attended different regular classrooms. The majority of the participants (44 of 57) were in a general education classroom full-time, while the remaining 13 participants attended a special education classroom between 1 and 6 hr per week but were mainstreamed into a general education classroom for the remaining school hours. Classroom sociometric nominations were taken in the general education classroom for all participants in the current study. The mean and median consent rate among same-sex classroom peers was 71%. The totals of positive and negative nominations each child received were converted to *z*-scores within the child's classroom. For details, see Hoza, Gerdes, et al. (2005).

Self-reported depressive symptoms. Children self-reported on the Children's Depression Inventory (CDI; Kovacs, 2010) at the 14-month, 24-month, and 36-month assessment points. This is a well-validated, age- and sex-normed scale that assesses depressive symptomatology. The CDI contains 27 items, each answered on a 3-point metric where 0 represents good functioning or feelings about oneself (e.g., "I look OK"), 2 represents poor functioning or feelings (e.g., "I look ugly"), and 1 represents a middle state (e.g., "There are some bad things about my looks"). The child's total score was considered in analyses. Internal consistencies (as assessed by Cronbach's alphas) in our sample were .82 at the 14-month assessment, .76 at the 24-month assessment, and .81 at the 36-month assessment.

Self-reported antisocial behavior. Children completed the *Self-Reported Antisocial Behavior scale* (SRA; Loeber, Stouthamer-Loeber, Van Kammen, & Farrington, 1989) at the 14-month and 24-month assessment points (it was not administered at the 36-month assessment). The SRA assesses children's overt and covert aggression, rule violations, and delinquency. Loeber and colleagues (1989) reported strong psychometric properties of this scale, including predictive

and concurrent validity with police records. The SRA contains 33 items assessing the presence of antisocial behavior (e.g., "ever, on purpose, destroyed the property of a family member?") with follow-up questions to assess the frequency and severity of these behaviors. The total number of antisocial behaviors endorsed was used in these analyses. Cronbach's alphas in our sample were .83 at the 14-month assessment and .70 at the 24-month assessment.

Parent- and teacher-reported internalizing behavior. Parents and classroom teachers completed the Social Skills Rating System (SSRS; Gresham & Elliott, 1990) at the 9-month, 24-month, and 36-month assessment points. The internalizing behavior subscale was chosen to indicate parent- and teacher-reported depression and anxiety symptoms. It contains six items (e.g., "acts sad or depressed"), each answered on a 3-point metric. Gresham and Elliott (1990) reported strong test–retest reliability, internal consistency, and construct validity of this subscale. Cronbach's alphas in our sample for the parent and teacher versions, respectively, were .75 and .76 at the 9-month assessment and .77 and .83 at the 24-month assessment. Although this measure was given at the 36-month assessment, the alpha was too low on the parent-report form to include it, but the alpha was sufficient for the teacher-report form (.81).

Parent- and teacher-reported externalizing behavior. We also analyzed the externalizing behavior subscale from the parent- and teacher-completed SSRS at the 9-month, 24-month, and 36-month assessments. This subscale contains six items (e.g., "argues with others") answered on a 3-point metric assessing aggression, oppositional behavior, and conduct problems. Psychometric properties are also reported by Gresham and Elliott (1990). Cronbach's alphas in our sample for the parent and teacher versions, respectively, were .82 and .89 at the 9-month assessment and .82 and .90 at the 24-month assessment. At the 36-month assessment, the alpha was too low on the parent-report form to include this measure, but it was sufficient for the teacher-report form (.91).

Data Analytic Plan

We first centered sociometric nomination scores so that they had a sample mean of zero, in accordance with recommendations by Aiken and West (1991). To assess the cross-situational correspondence of sociometric nominations, bivariate correlations were calculated between rates of positive and negative nominations received in STP and classroom settings. Next, to assess the predictive power of STP versus classroom nominations on subsequent psychopathology, we conducted regression analyses for each criterion variable of psychopathology (i.e., self-reported

depressive symptoms and antisocial behavior, parent- and teacher-reported internalizing and externalizing behavior at the 24-month assessment point, and self-reported depression and teacher-reported internalizing and externalizing behavior at the 36-month assessment point). All psychopathology measures were converted to *z*-scores within our sample. The same psychopathology measure at the 9-month (for SSRS) or 14-month assessment point (for CDI and SRA) was entered at Step 1 to adjust for initial levels of functioning. We then examined the incremental variance in psychopathology explained by STP and classroom nominations (placed together on Step 2), and on Step 3, we placed the interaction between STP and classroom nominations. Significant interaction effects were probed in the manner suggested by Holmbeck (2002). Because of the theoretical rationale that positive and negative sociometric nominations are conceptually distinct constructs (Coie et al., 1982; Newcomb, Bukowski, & Pattee, 1993), instead of examining social preference scores, we tested the effects of positive and negative nominations separately for each criterion variable.

When we included child age and sex as covariates in the models, there was no change in direction or significance of any results, so we excluded these variables from the final models. In addition, we conducted two other analyses in an attempt to address the concern that children's receipt of varied amounts of treatment could have influenced their values on the sociometric and baseline psychopathology measures, given that these measures were collected at slightly different time points. First, because children were enrolled in the MTA over a 6-month period in the winter/spring and began treatment on enrollment, some children had received up to 6 months of additional treatment relative to others by the time the STP and classroom sociometric measures were taken. However, date of study enrollment was not significantly related to either STP or classroom sociometrics, or any baseline psychopathology measure, suggesting that receipt of varied amounts of treatment did not influence scores on these variables. Second, because previous MTA findings indicate that the Comb condition (and not Beh) had significant effects on improving ADHD, oppositional, and internalizing behavior relative to CC, we reasoned that if receipt of differential amounts of treatment was to influence sociometrics and psychopathology scores, it would most likely occur in the Comb group relative to the Beh group. Therefore, we tested all potential sociometrics (STP and classroom) by treatment condition (Comb vs. Beh) interactions in predicting all adjustment variables. No interaction was significant, which strengthens our confidence that the pattern of results obtained herein may be similar for the Comb and Beh conditions. In sum, results obtained do not appear to be artifacts of children having received different amounts of treatment at the time the measure was collected.

Results

All 57 children had complete data on sociometric nomination variables. Regarding psychopathology measures, the number of children with complete data on baseline and 24-month outcomes ranged from 51 to 54, and the number of children with complete data on baseline and 36-month outcomes ranged from 45 to 49. Missing data was handled by listwise deletion. There were no outliers above 3 *SD*s beyond the mean for any sociometric variable and most psychopathology variables. However, one outlier greater than 3 *SD*s beyond the mean for self-reported depression at the 14-month and 24-month assessments and one for self-reported antisocial behavior at the 14-month and 24-month assessments were trimmed to values exactly 3 *SD*s beyond the mean.

Cross-Setting Correspondence in Sociometric Nominations

As shown in Table 1, there were significant and small- to medium-strength cross-setting correspondences between nominations in the STP and the regular classroom ($r = .26$ –.39). Not surprisingly, the correlation between classroom positive and classroom negative nominations (i.e., same peers providing both nominations at the same time point) was larger in absolute magnitude than the correlation between positive nominations across settings, $t(54) = 4.67$; $p < .01$, or negative nominations across settings, $t(54) = 4.34$; $p < .01$. Similarly, the correlation between STP positive and STP negative nominations was larger in absolute magnitude than the correlation between positive nominations across settings, $t(54) = 3.41$; $p < .01$, or negative nominations across settings, $t(54) = 2.41$; $p = .02$.

STP and Classroom Sociometric Nominations Predict Subsequent Psychopathology

Self-reported depressive symptoms. After statistical adjustment of depressive symptoms at the 14-month assessment point, higher rates of STP positive nominations predicted lower rates of self-reported depressive symptoms at the 24-month assessment point. See Table 2 for details. Neither classroom positive nominations nor the interaction between STP and classroom positive nominations was a significant predictor. In regressions examining the effects of negative nominations, neither classroom nor STP negative nominations nor their interaction was significant in predicting self-reported depressive symptoms at the 24-month assessment.

Table 2 also displays 36-month findings after statistical adjustment of depressive symptoms at the 14-month assessment. Higher rates of STP positive nominations predicted lower rates of self-reported depressive symptoms at the 36-month assessment point. Yet, surprisingly, *higher* rates

of classroom positive nominations predicted higher rates of depressive symptoms at this assessment point. The interaction between classroom and STP positive nominations was not significant.

Neither classroom nor STP negative nominations predicted self-reported depressive symptoms at the 36-month assessment point as a main effect, but their interaction was significant (see Table 2). Probing of this interaction revealed that higher rates of STP negative nominations predicted subsequent increases in depressive symptoms for children 1 *SD* below the mean in classroom negative nominations (e.g., who were infrequently picked as "nonfriends" by classroom peers; $\beta = .51$; $p < .01$). However, the relationship between STP negative nominations and depressive symptoms at the 36-month assessment was not significant for children 1 *SD* above the mean in classroom negative nominations (e.g., who were frequently picked as "nonfriends" by classroom peers; $\beta = -.10$; $p = .52$).

Self-reported antisocial behavior. After statistical adjustment of antisocial behavior at the 14-month assessment point, neither STP nor classroom positive nominations nor their interaction predicted self-reported antisocial behavior at the 24-month assessment. However, higher rates of negative nominations received at the STP predicted higher rates of antisocial behavior at the 24-month assessment. Neither classroom negative nominations nor the interaction between STP and classroom negative nominations was significant (see Table 3).

Parent- and teacher-reported internalizing behavior. Neither STP nor classroom nominations (either positive or negative) predicted parent- or teacher-rated internalizing behavior problems at the 24-month assessment point after statistical adjustment of these problems at the 9-month assessment point. However, there was an interaction between STP and classroom positive nominations in predicting parent-rated internalizing behavior at the 24-month assessment point (see Table 4). Higher rates of STP positive nominations predicted lower rates of parent-rated internalizing behavior for children 1 *SD* above the mean in classroom positive nominations (who were frequently picked as "friends" by classroom peers; $\beta = -.32$; $p = .02$) but not for children 1 *SD* below the mean in classroom positive nominations (who were infrequently picked as "friends" by classroom peers; $\beta = .08$; $p = .60$). There were no main or interaction effects of sociometrics in predicting teacher report of internalizing behavior at the 36-month assessment.

Parent- and teacher-reported externalizing behavior. After statistical adjustment of problems at the 9-month assessment, STP and classroom nominations (positive and negative) did not predict parent- and teacher-rated externalizing behavior problems at the 24-month assessment point. An interaction

Table 1. Correlations Among Study Variables.

Variable name	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Class posnoms	-.79**	.28*	-.39**	.01	.03	.32*	.20	.22	-.09	.03	-.07	.06	-.12	-.22	-.09	-.07	.03	.22
2. Class negnoms	—	-.26†	.37**	.04	.12	-.13	-.23	-.20	.10	-.08	.02	.00	.05	.03	-.09	.04	-.07	-.15
3. STP posnoms		—	-.67**	-.15	-.33*	-.20	-.21	-.32*	-.22	-.24	-.19	-.16	-.19	-.12	-.10	-.28*	-.20	-.21
4. STP negnoms			—	.05	.21	.11	.11	.28*	.24	.07	.29*	.09	.18	.11	.12	.35*	.24	.18
5. CDI (14 mo)				—	.48**	.59**	.44**	.38**	-.02	.05	.14	.05	-.10	-.05	.21	.12	.09	.17
6. CDI (24 mo)					—	.59**	.35*	.40**	.14	.21	.06	.09	.25	.12	.19	.16	.19	.24
7. CDI (36 mo)						—	.36*	.36*	.05	.23	.23	.25	.18	.15	.27	.10	.27	.32*
8. SRA (14 mo)							—	.69**	-.07	.12	.08	.07	-.14	.20	.55**	.19	.20	.48**
9. SRA (24 mo)								—	-.04	.19	.23	.16	.06	.06	.42**	.33*	.29*	.40**
10. P-SSRS-I (9 mo)									—	.70**	.60**	.36**	.21	.08	-.06	.11	.22	.22
11. P-SSRS-I (24 mo)										—	.59**	.67**	.30*	.41*	.18	.07	.38**	.34*
12. P-SSRS-E (9 mo)											—	.67**	.24	.14	.05	.40**	.48**	.40
13. P-SSRS-E (24 mo)												—	.14	.21	-.09	.20	.44**	.34*
14. T-SSRS-I (9 mo)													—	.01	.10	.39**	.32*	.25
15. T-SSRS-I (24 mo)														—	.52**	-.08	.25	.05
16. T-SSRS-I (36 mo)															—	-.02	.17	.19
17. T-SSRS-E (9 mo)																—	.62**	.56**
18. T-SSRS-E (24 mo)																	—	.62**
19. T-SSRS-E (36 mo)																		—

Note. Posnoms = positive nominations; Negnoms = negative nominations; STP = Summer Treatment Program; CDI = Children's Depression Inventory; SRA = Self-Reported Antisocial Behavior; P-SSRS-I and P-SSRS-E = Parent Social Skills Rating System—Internalizing and Externalizing Behavior; T-SSRS-I and T-SSRS-E = Teacher Social Skills Rating System—Internalizing and Externalizing Behavior.

†p = .051. *p < .05. **p < .01.

Table 2. STP and Classroom Sociometrics as Predictors of Changes in Self-Reported Depressive Symptoms.

Variable name	R^2 total	R^2 change	β	p
Criterion variable: CDI at 24-month assessment				
Step 1	.23	.23		
CDI at 14-month assessment			.48	< .001
Step 2	.31	.08		
Class posnoms			.08	.508
STP posnoms			−.30	.019
Step 3	.31	.00	−.06	.620
STP posnoms × Class posnoms				
Criterion variable: CDI at 36-month assessment				
Step 1	.35	.35		
CDI at 14-month assessment			.59	< .001
Step 2	.48	.13		
Class posnoms			.36	.007
STP posnoms			−.23	.048
Step 3	.51	.03		
STP posnoms × Class posnoms			−.19	.089
Criterion variable: CDI at 36-month assessment				
Step 1	.35	.35		
CDI at 14-month assessment			.59	< .001
Step 2	.39	.04		
Class negnoms			−.17	.168
STP negnoms			.16	.207
Step 3	.46	.07		
STP negnoms × Class negnoms			−.29	.018

Note. STP = Summer Treatment Program; CDI = Children's Depression Inventory; posnoms = positive nominations; negnoms = negative nominations.

Table 3. STP and Classroom Sociometrics as Predictors of Changes in Self-Reported Antisocial Behavior.

Variable name	R^2 total	R^2 change	β	p
Criterion variable: SRA at 24-month assessment				
Step 1	.48	.48		
SRA at 14-month assessment			.69	<.001
Step 2	.54	.06		
Class negnoms			−.19	.085
STP negnoms			.25	.026
Step 3	.55	.01		
STP negnoms × Class negnoms			−.11	.305

Note. STP = Summer Treatment Program; SRA = Self-Reported Antisocial Behavior; posnoms = positive nominations; negnoms = negative nominations

effect was found between STP and classroom negative nominations in predicting teacher-rated externalizing behavior at the 24-month assessment (see Table 4). For children 1 *SD* below the mean in classroom negative nominations (who were infrequently picked as "nonfriends" by classroom peers), higher rates of STP negative nominations were associated with greater teacher-reported externalizing behavior (β = .41; *p* = .04). However, the association between STP negative nominations and teacher-reported externalizing behavior was not present for children 1 *SD* above the mean in classroom negative nominations (who

were frequently picked as "nonfriends" by classroom peers; β = −.16; *p* = .32). There were no main or interaction effects of sociometric nominations in predicting teacher report of externalizing behavior at the 36-month assessment.

Discussion

In our examination of cross-setting correspondence of sociometric nominations among children with ADHD, we first found evidence for significant, albeit not overly strong, correlations between nominations obtained in children's

Table 4. STP and Classroom Sociometrics as Predictors of Changes in Parent- and Teacher-Reported Behavior Problems.

Variable name	R^2 total	R^2 change	β	p
Criterion variable: P-SSRS-I at 24-month assessment				
Step 1	.45	.45		
P-SSRS-I at 9-month assessment			.67	< .001
Step 2	.57	.03		
Class posnoms			.06	.586
STP posnoms			−.16	.139
Step 3	.61	.04		
STP posnoms × Class posnoms			−.21	.049
Criterion variable: T-SSRS-E at 24-month assessment				
Step 1	.39	.39		
P-SSRS-I at 9-month assessment			.62	<.001
Step 2	.40	.01		
Class negnoms			−.08	.507
STP negnoms			.07	.576
Step 3	.46	.07		
STP negnoms × Class negnoms			−.27	.023

Note. STP = Summer Treatment Program; P-SSRS-I = Parent Social Skills Rating System–Internalizing Behavior; T-SSRS-E = Teacher Social Skills Rating System–Externalizing Behavior; posnoms = positive nominations; negnoms = negative nominations.

general education classrooms and in an all-ADHD summer program (the STP). This finding suggests that some children with ADHD may have social skill deficits or problem behaviors that are so severe such that they incur peer rejection regardless of variations in the peer group setting or the composition of the peer group. These correlations compare favorably with existing findings that the average correlation between parent and teacher reports of the same child's problem behaviors is $r = .28$ (Achenbach, McConaughy, & Howell, 1987) and that the correlations between peer sociometrics and teacher report of peers' liking (concurrently, within the same classroom) are $r = .26$–30 (Wu, Hart, Draper, & Olsen, 2001). However, the correlations obtained in this study are smaller than the correlations of $r = .52$–.57 obtained between sociometrics in the classroom and on a psychiatric inpatient unit (Zakriski & Prinstein, 2001), albeit in a small sample of 15 children with EBD where sociometrics in both contexts were collected at approximately the same time point.

Nonetheless, discrepancies existed between sociometric nominations in classroom versus STP settings for some children in our study, supporting the idea that peer group norms, which vary across settings, may also influence peers' sociometric judgments. In the current study, we were not able to directly measure peer group norms in classroom versus STP settings. However, we speculate that more than one process may have shaped peer group norms about problem behavior: Specifically, because all STP peers had ADHD while the classroom peers were presumed to be largely typically developing, problem behavior may have been more normative in the STP and therefore, relatively less devalued by peers compared with in the classroom.

However, because the nature of the STP requires teachers to consistently draw attention to children's problem behavior (and provide response cost for problem behavior with a greater frequency and intensity than is typically found in general education classrooms), STP teachers may have encouraged peers to devalue problem behavior more than in the regular classroom.

Our results also suggest that sociometric nomination rates in each setting may bear differential implications for predicting subsequent psychopathology. After statistical adjustment of nominations in the other setting, lower rates of STP positive nominations (but not classroom nominations), as well as higher rates of STP negative nominations (but not classroom nominations) incrementally predicted self-reported depressive symptoms and antisocial behavior, respectively, 1 year later. Self-reported depressive symptomatology 2 years later was predicted by lower rates of STP positive nominations yet higher rates of classroom positive nominations. Higher rates of STP negative nominations predicted increased teacher-reported externalizing behavior 1 year later and self-reported depressive symptoms 2 years later but only for children with low rates of classroom negative nominations. In addition, the effect of higher rates of STP positive nominations on reduced parent-reported internalizing behavior 1 year later was only present for children with high rates of classroom positive nominations.

Taken together, these results suggest that high rates of negative nominations and low rates of positive nominations in the STP may carry more weight relative to corresponding classroom sociometric nominations in incrementally predicting subsequent increases in (or failing to prevent

normative decreases in) self-reported depressive symptoms and antisocial behavior. Interestingly, the interaction effects suggest a consistent pattern—that STP nominations were the most predictive of self-reported as well as parent- and teacher-reported psychopathology when children had relatively better peer functioning (e.g., higher rates of positive and lower rates of negative nominations) in their regular classrooms. Given that poor sociometric functioning in classroom and ADHD summer program settings have each been found (in independent studies) to predict exacerbated psychopathology in ADHD populations—but that no study has directly compared the incremental predictive power of sociometrics in each setting—this result may be informative for future research about the associations between peer problems and maladjustment.

Our main effect findings are somewhat surprising because it seems logical that children's psychopathology would be the most strongly related to their sociometric nominations in the setting in which they spend the most time and in a setting dominated by typically developing peers—that is, their regular school classroom. However, because children with ADHD are commonly peer-rejected in their regular classrooms (Hoza, Mrug, et al., 2005), there may be a restriction of range in the classroom nomination data. Specifically, the children with ADHD in the current sample were, on average, approximately 1 *SD* below their classroom means in peer functioning (Hoza, Gerdes, et al., 2005). Poor peer functioning in the STP may have singled out children with the most profound dysfunction who were disliked even among a group of all-ADHD peers. Alternatively, the children with poor peer relationships in the STP may be those who failed to demonstrate skilled behavior despite being in an intensive treatment environment in which strong contingencies for appropriate social behavior were in place (i.e., they represented a more severe phenotype as non-responders to the STP intervention).

That positive nominations from classroom peers predicted *increased* self-reported depressive symptoms 2 years later was also surprising. One possible explanation for this counterintuitive result is that, in the present study, children were asked to indicate their "best friends" to assess positive nominations, as opposed to indicating the peers whom they most liked. Given findings that children with ADHD may be likely to befriend other peers with behavioral problems, and to have friendships that are unstable and of poor quality (Normand et al., 2011), classroom positive nominations may capture dyadic ties of indeterminate quality (as opposed to general positive peer regard), leading to the conflicting results obtained herein. Another possible explanation draws from findings that many children with ADHD overestimate their own competence; intriguingly, having overly inflated positive self-illusions has been found to be protective against depression in ADHD samples (Hoza et al., 2004; Mikami, Calhoun, & Abikoff, 2010). Classroom peers, who

may be less tolerant of children who overestimate their own competence relative to STP peers, may give more positive nominations to the children with ADHD who have realistic self-perceptions. However, the realistic self-perceptions of these children with ADHD may also predispose them to an awareness of their own deficits and, therefore, depression.

The statistical interaction effects offer a more complete (yet complex) picture of the way in which sociometric nominations across settings may incrementally predict psychopathology. Whereas the main effects for STP nominations as predicting psychopathology, over and above classroom nominations, were restricted to child self-report outcomes, a pattern of interaction effects was found for self-report, parent-report, and teacher-report outcomes. Across informants, lower rates of positive and higher rates of negative STP nominations were most strongly associated with increased psychopathology for children with relatively better peer functioning in their regular classroom. A possible implication is that the incremental predictive power of peer problems in one setting for subsequent maladjustment may be strongest when children are not indicated to have peer problems in the other setting.

Strengths of this study include the enrollment of participants with clinically diagnosed ADHD, making them relevant to population of youth labeled as having EBD in school or mental health settings. The use of peer sociometric nomination procedures and the incorporation of self-reported, parent-reported, and teacher-reported psychopathology outcome variables serve to reduce shared method variance. As well, the longitudinal nature of the dataset allowed for examination of changes in psychopathology over a period of approximately 2 years.

Some limitations concern the composition of the sample. First, the sample is small because sociometrics in the classroom and STP were an optional part of the MTA, so a minority of sites collected this data, and because participants needed to have been randomized to either Comb or Beh (two of the four treatment arms) to receive the STP. As well, the 4:1 male:female ratio in the current data reflects the gender imbalance in children with ADHD-C but does not allow examination of how peer functioning and psychopathology may be differently associated for girls relative to boys. Third, incorporating data from later follow-up points beyond 36 months would also be valuable, but we did not attempt that in the current dataset because it would have led to greater attrition in an already small sample. Another issue is that the wording used to solicit positive and negative nominations in this study differed from traditional wording that asks peers who they "like most" and "like least," as well as differed slightly between the classroom and STP contexts, making it difficult to compare the findings from this study to much existing research. Finally, future work would benefit from inclusion of measures that assess peer group norms and other important measures of peer functioning, such as reciprocated

friendships, perceived popularity, or social prominence. These are important directions for future research.

It is also necessary to consider the interpretation of results in light of the timing of when the measures were collected. The ideal test of hypotheses would have involved the concurrent collection of STP nominations, classroom nominations, and baseline measures of psychopathology before any treatment had occurred. Instead, in the current study, STP nominations were obtained at approximately Months 3 to 6 and classroom nominations at Months 11 to 14 in an active treatment period; initial measures of psychopathology (considered as covariates) were collected at Months 9 and 14. The timing of study measures may have influenced findings in several ways. First, correlations between STP and classroom nominations might be larger if nominations had been collected concurrently, as our correlations may be attenuated not only by the different peers in each setting but also by the passage of time. Second, the fact that STP sociometrics were collected early, and classroom sociometrics and baseline psychopathology late in the treatment period, may have affected their relative predictive power for subsequent psychopathology. Perhaps because they were collected when the child had received nearly the full dose of the intensive MTA treatment, classroom nominations best index children's peer functioning that is stable for the longer term, therefore strengthening the predictive power of these measures. Alternatively, given that MTA treatments were discontinued after the first 14 months, if it is assumed that children begin to revert to baseline functioning once treatment ceases, then STP nominations (which occurred early in treatment) may better reflect children's baseline state and therefore, be most predictive of ultimate outcome. However, all these conjectures are speculative and we did not find evidence that the timing of measures influenced sociometric functioning or psychopathology, particularly in the Beh condition.

In conclusion, our results further the conceptualization of peer problems by suggesting that sociometric nomination rates may vary for the same child depending on the peer group setting in which the nominations occur. Furthermore, sociometric nominations in different settings may incrementally, and interactively, predict subsequent psychopathology. Children with EBD often participate in more than one peer group setting and are at risk of exacerbated adjustment problems. An implication for clinical practice is that it may be worthwhile to inquire about children's peer functioning in multiple settings to best understand the child's risk of adverse outcomes and to inform treatment.

Authors' Note

Declaration of Conflicting Interests

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References

Achenbach, T. M., McConaughy, S. H., & Howell, C. T. (1987). Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychological Bulletin*, *101*, 213–232. doi:10.1037/0033-2909.101.2.213

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: SAGE.

Arnold, L. E., Abikoff, H. B., Cantwell, D. P., Conners, C. K., Elliott, G., Greenhill, L. L., . . .Wells, K. C. (1997). National Institute of Mental Health collaborative multimodal treatment study of children with ADHD (the MTA): Design challenges and choices. *Archives of General Psychiatry*, *54*, 865–870.

Asarnow, J. R. (1988). Peer status and social competence in child psychiatric inpatients: A comparison of children with depressive, externalizing, and concurrent depressive and externalizing disorders. *Journal of Abnormal Child Psychology*, *16*, 151–162. doi:10.1007/bf00913591

Blachman, D. R., & Hinshaw, S. P. (2002). Patterns of friendship among girls with and without attention-deficit/hyperactivity disorder. *Journal of Abnormal Child Psychology*, *30*, 625–640. doi:10.1023/a:1020815814973

Chang, L., Liu, H., Fung, K. Y., Wang, Y., Wen, Z., Li, H., & Farver, J. A. M. (2007). The mediating and moderating effects of teacher preference on the relations between students' social behaviors and peer acceptance. *Merrill-Palmer Quarterly: Journal of Developmental Psychology*, *53*, 603–630. doi:10.1353/mpq.2008.0006

Coie, J. D., Dodge, K. A., & Coppotelli, H. (1982). Dimensions and types of social status: A cross-age perspective. *Developmental Psychology*, *18*, 557–570. doi:10.1037/0012-1649.18.4.557

DeRosier, M. E., Kupersmidt, J. B., & Patterson, C. J. (1994). Children's academic and behavioral adjustment as a function of the chronicity and proximity of peer rejection. *Child Development*, *65*, 1799–1813. doi:10.1111/j.1467-8624.1994.tb00850.x

Egger, H. L., & Angold, A. (2006). Common emotional and behavioral disorders in preschool children: Presentation, nosology, and epidemiology. *Journal of Child Psychology and Psychiatry*, *47*, 313–337. doi:10.1111/j.1469-7610.2006.01618.x

Erhardt, D., & Hinshaw, S. P. (1994). Initial sociometric impressions of attention-deficit hyperactivity disorder and comparison boys: Predictions from social behaviors and from nonbehavioral variables. *Journal of Consulting and Clinical Psychology*, *62*, 833–842. doi:10.1037/0022-006x.62.4.833

Farmer, T. W., & Hollowell, J. H. (1994). Social networks in mainstream classrooms: Social affiliations and behavioral characteristics of students with EBD. *Journal of Emotional and Behavioral Disorders*, *2*, 143–155. doi:10.1177/106342669400200302

Gest, S. D., Graham-Bermann, S. A., & Hartup, W. W. (2001). Peer experience: Common and unique features of number of friendships, social network centrality, and sociometric status. *Social Development*, *10*, 23–40. doi:10.1111/1467-9507.00146

Greene, R. W., Biederman, J., Faraone, S. V., Sienna, M., & Garcia-Jetton, J. (1997). Adolescent outcome of boys with attention-deficit/hyperactivity disorder and social disability: Results from a 4-year longitudinal follow-up study. *Journal of Consulting and Clinical Psychology*, *65*, 758–767. doi:10.1037/0022-006x.65.5.758

Gresham, F. M., Cook, C. R., Crews, S. D., & Kern, L. (2004). Social skills training for children and youth with emotional and behavioral disorders: Validity considerations and future directions. *Behavioral Disorders*, *30*, 32–46.

Gresham, F. M., & Elliott, S. N. (1990). *Social Skills Rating System*. Circle Pines, MN: Assistance Service.

Hinshaw, S. P., March, J. S., Abikoff, H., Arnold, L. E., Cantwell, D. P., Conners, C. K., . . .Wells, K. C. (1997). Comprehensive assessment of childhood attention-deficit hyperactivity disorder in the context of a multisite, multimodal clinical trial. *Journal of Attention Disorders*, *1*, 217–234.

Hinshaw, S. P., & Melnick, S. M. (1995). Peer relationships in boys with attention-deficit hyperactivity disorder with and without comorbid aggression. *Development and Psychopathology*, *7*, 627–647. doi:10.1017/s0954579400006751

Hodgens, J. B., Cole, J., & Boldizar, J. (2000). Peer-based differences among boys with ADHD. *Journal of Clinical Child Psychology*, *29*, 443–452. doi:10.1207/s15374424jccp2903_15

Holmbeck, G. N. (2002). Post-hoc probing of significant moderational and mediational effects in studies of pediatric populations. *Journal of Pediatric Psychology*, *27*, 87–96. doi:10.1093/jpepsy/27.1.87

Hoza, B., Gerdes, A. C., Hinshaw, S. P., Arnold, L. E., Pelham, W. E., Jr., Molina, B. S. G., . . .Wigal, T. (2004). Self-perceptions of competence in children with ADHD and comparison children. *Journal of Consulting and Clinical Psychology*, *72*, 382–391. doi:10.1037/0022-006x.72.3.382

Hoza, B., Gerdes, A. C., Mrug, S., Hinshaw, S. P., Bukowski, W. M., Gold, J. A., . . .Wigal, T. (2005). Peer-assessed outcomes in the multimodal treatment study of children with attention deficit hyperactivity disorder. *Journal of Clinical Child and Adolescent Psychology*, *34*, 74–86. doi:10.1207/s15374424jccp3401_7

Hoza, B., Mrug, S., Gerdes, A. C., Hinshaw, S. P., Bukowski, W. M., Gold, J. A., . . .Arnold, L. E. (2005). What aspects of peer relationships are impaired in children with attention-deficit/hyperactivity disorder? *Journal of Consulting and Clinical Psychology*, *73*, 411–423. doi:10.1037/0022-006x.73.3.411

Jensen, P. S., Arnold, L. E., Swanson, J. M., Vitiello, B., Abikoff, H. B., Greenhill, L. L., . . .Hur, K. (2007). 3-year follow-up of the NIMH MTA Study. *Journal of the American Academy of Child & Adolescent Psychiatry*, *46*, 989–1002. doi:10.1097/CHI.0b013e3180686d48

Kovacs, M. (2010). *CDI-2: Children's Depression Inventory–2nd edition manual*. North Tonawanda, NY: Multi-Health Systems.

Loeber, R., Stouthamer-Loeber, M., Van Kammen, W. B., & Farrington, D. P. (1989). Development of a new measure of self-reported antisocial behavior for young children: Prevalence and reliability. In M. Klein (Ed.), *Cross-national research in self-reported crime and delinquency* (pp. 203–225). Boston, MA: Kluwer-Nijhoff.

Mikami, A. Y., Calhoun, C. D., & Abikoff, H. B. (2010). Positive illusory bias and response to behavioral treatment among children with attention-deficit/hyperactivity disorder. *Journal of Clinical Child and Adolescent Psychology*, *39*, 373–385. doi:10.1080/15374411003691735

Mikami, A. Y., Griggs, M. S., Lerner, M. D., Emeh, C. C., Reuland, M. M., Jack, A., & Anthony, M. R. (2013). A randomized trial of a classroom intervention to increase peers' social inclusion of children with attention-deficit/hyperactivity disorder. *Journal of Consulting and Clinical Psychology*, *81*, 100–112. doi:10.1037/a0029654

Mikami, A. Y., Griggs, M. S., Reuland, M. M., & Gregory, A. (2012). Teacher practices as predictors of children's classroom social preference. *Journal of School Psychology*, *50*, 95–111. doi:10.1016/j.jsp.2011.08.002

Mikami, A. Y., & Hinshaw, S. P. (2006). Resilient adolescent adjustment among girls: Buffers of childhood peer rejection and attention-deficit/hyperactivity disorder. *Journal of Abnormal Child Psychology*, *34*, 823–837. doi:10.1007/s10802-006-9062-7

Mikami, A. Y., Hinshaw, S. P., Patterson, K. A., & Lee, J. C. (2008). Eating pathology among adolescent girls with attention-deficit/hyperactivity disorder. *Journal of Abnormal Psychology*, *117*, 225–235. doi:10.1037/0021-843x.117.1.225

Mrug, S., Hoza, B., Pelham, W. E., Gnagy, E. M., & Greiner, A. R. (2007). Behavior and peer status in children with ADHD: Continuity and change. *Journal of Attention Disorders*, *10*, 359–371. doi:10.1177/1087054706288117

Mrug, S., Molina, B. G., Hoza, B., Gerdes, A., Hinshaw, S., Hechtman, L., & Arnold, L. E. (2012). Peer rejection and friendships in children with attention-deficit/hyperactivity disorder: Contributions to long-term outcomes. *Journal of Abnormal Child Psychology*, *40*, 1013–1026. doi:10.1007/s10802-012-9610-2

MTA Cooperative Group. (1999). A 14-month randomized clinical trial of treatment strategies for attention-deficit/hyperactivity disorder. *Archives of General Psychiatry*, *56*, 1073–1086. doi:10.1001/archpsyc.56.12.1073

MTA Cooperative Group. (2004). National Institute of Mental Health multimodal treatment study of ADHD follow-up: 24-Month outcomes of treatment strategies for attention-deficit/hyperactivity disorder. *Pediatrics*, *113*, 754–761.

Murray-Close, D., Hoza, B., Hinshaw, S. P., Arnold, L. E., Swanson, J., Jensen, P. S., . . .Wells, K. (2010). Developmental processes in peer problems of children with attention-deficit/hyperactivity disorder in the Multimodal Treatment Study of Children With ADHD: Developmental cascades and vicious cycles. *Development and Psychopathology*, *22*, 785–802. doi:http://dx.doi.org/10.1017/S0954579410000465

Newcomb, A. F., Bukowski, W. M., & Pattee, L. (1993). Children's peer relations: A meta-analytic review of popular, rejected, neglected, controversial, and average sociometric status. *Psychological Bulletin*, *113*, 99–128. doi:10.1037/0033-2909.113.1.99

Normand, S., Schneider, B., Lee, M., Maisonneuve, M.-F., Kuehn, S., & Robaey, P. (2011). How do children with ADHD (mis) manage their real-life dyadic friendships? A multi-method investigation. *Journal of Abnormal Child Psychology*, *39*, 293–305. doi:10.1007/s10802-010-9450-x

Parker, J. G., & Asher, S. R. (1987). Peer relations and later personal adjustment: Are low-accepted children at risk? *Psychological Bulletin*, *102*, 357–389. doi:10.1037/0033-2909.102.3.357

Pelham, W. E., Gnagy, E. M., Greiner, A. R., Hoza, B., Hinshaw, S. P., Swanson, J. M., . . .McBurnett, K. (2000). Behavioral versus behavioral and pharmacological treatment in ADHD children attending a summer treatment program. *Journal of Abnormal Child Psychology*, *28*, 507–525. doi:10.1023/A:1005127030251

Stormshak, E. A., Bierman, K. L., Bruschi, C., Dodge, K. A., & Coie, J. D. (1999). The relation between behavior problems and peer preference in different classroom contexts. *Child Development*, *70*, 169–182. doi:10.1111/1467-8624.00013

Whalen, C. K., Henker, B., Buhrmester, D., Hinshaw, S. P., Huber, A., & Laski, K. (1989). Does stimulant medication improve the peer status of hyperactive children? *Journal of Consulting and Clinical Psychology*, *57*, 545–549. doi:10.1037/0022-006x.57.4.545

Wright, J. C., Giammarino, M., & Parad, H. W. (1986). Social status in small groups: Individual–group similarity and the social "misfit." *Journal of Personality and Social Psychology*, *50*, 523–536. doi:10.1037/0022-3514.50.3.523

Wu, X., Hart, C. H., Draper, T. W., & Olsen, J. A. (2001). Peer and teacher sociometrics for preschool children: Cross-informant concordance, temporal stability, and reliability. *Merrill-Palmer Quarterly: Journal of Developmental Psychology*, *47*, 416–443. doi:10.1353/mpq.2001.0018

Zakriski, A. L., & Prinstein, M. J. (2001). Sociometric status of child inpatients in clinical and normative peer groups: Is peer status in a clinical setting a useful measure of adjustment? *Journal of Applied Developmental Psychology*, *22*, 157–173. doi:http://dx.doi.org/10.1016/S0193-3973(01)00074-0