Commentary: Social Competence in Children With Chronic Illness: The Devil Is in the Details

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It was with great anticipation that we began to read the recent review article, Social Competence in Children with Chronic Illness: A Meta-analytic Review (Martinez, Carter, & Legato, 2011). This topic has been one of our common interests for many years as it brings together our work in the areas of pediatric psychology and social developmental psychology. We were excited to see a meta-analysis in this prestigious journal focusing on a topic of great significance for the psychological development of children (Beckes & Coan, 2011). While we have completed reviews of this literature in the past (Reiter-Purtill & Noll, 2003; Reiter-Purtill, Waller, & Noll, 2009), our work has never included a formal meta-analysis.

It would be difficult to exaggerate the vast challenges associated with studying the effect of chronic diseases on social competence. One challenge derives from the heterogeneity and range in the chronic diseases seen in childhood. They vary in severity of symptoms, time course, treatments, and their immediate and long-term effects on multiple domains of physical, cognitive, and social functioning. The concept of social competence is equally complex and multifaceted. Definitions of social competence are often highly abstracted, and manifestations and measures of it cover a broad array of inter-related behaviors, competencies, and outcomes (Bukowski, Rubin, & Parker, 2002; Dirks, Treat, & Weersing, 2007). Adding to these challenges is the lack of a coherent and clearly formulated theory to serve as the conceptual point of departure for the development of clearly stated research hypotheses, the design of studies to test these hypotheses, and the interpretation of findings. Specific methodological challenges include the selection of appropriate measures, informants, and comparison groups. Together these factors make the study of chronic disease and social competence a complex, challenging, and always interesting enterprise.

The Martinez et al. (2011) meta-analysis examines a large group of studies (N = 57) focusing on pediatric chronic illness (CI) and social competence. While challenging to undertake, it is well known that meta-analysis is a powerful tool for revealing the overall effect size (ES) for the association between variables and for identifying the sources of variability in these associations. Meta-analysis is a critical procedure for creating an empirical foundation on which “best practices” can be built. The success of a meta-analysis and the validity of its conclusions depend on several factors. These include (a) the review process (was the selection of studies inclusive and comprehensive?); (b) conceptual and theoretical issues: alternative heuristic models that might be useful in pediatric psychology; (c) the adequacy of the organizational procedures used to categorize studies according to the variables that distinguish them from each other; (d) the strength and clarity of empirical justifications for the stated conclusions; and (e) the utility of the conclusions to stimulate further research (i.e., clinical trials to remediate difficulties) or to serve as a final statement for a literature that has come to its end.

There is no doubt that the meta-analysis reported by Martinez et al. (2011) has many strengths and that it is the result of much effort. As with results of any meta-analysis, one can ask whether the present findings and procedures meet the standards expected of this type of inquiry. In this commentary, we would like to draw attention to the above five aspects of this analysis and its conclusions that suggest that more work needs to be done in this area.
**Review Process: Was the Selection of Studies Inclusive and Comprehensive?**

The consideration of all relevant papers is a fundamental necessity for any review. The validity of the conclusions depends to a large extent on the papers that are included and those that are omitted. In the current review an impressively clear set of procedures were used to identify relevant studies (Martinez et al., 2011, p. 880). Key terms were carefully delineated; forward searches were utilized; and the authors included manual searches from the Journal of Pediatric Psychology (JPP) and the Journal of Developmental and Behavioral Pediatrics (JDBP). Critical inclusion criteria were the presence of a comparison group or use of a measure with well-established norms that could be used to calculate ESs. Using these and other clearly defined selection criteria, Martinez et al. identified 57 studies.

Although we were initially impressed by the number of papers located, a closer look suggested that some widely cited papers were missing. Accordingly, we conducted our own search to see if some relevant papers had been overlooked (see Supplementary Table). This search included papers covered in our previous reviews that were noted by Martinez et al. (Reiter-Purtill et al., 2009; Reiter-Purtill & Noll, 2003); the ASEBA bibliography; two randomly chosen volumes of JPP and JDBP, and our own published papers. These searches, which employed the explicit inclusion criteria used described by Martinez et al. turned up an additional 38 papers (shown in Supplementary Table 1) that appear to have been overlooked even though they met inclusion criteria. Since the overall review was based on 57 papers, the omission of 38 papers suggests a serious threat to the external validity of the review. Notably, while the authors of the meta-analysis lament the shortage of data from teachers and peers in their discussion section and suggest that “neither teacher nor peer reports were significant, although this could be due to the small number of outcomes…” (p. 885), simply using the papers from our group would have added 10 papers with data from teachers and/or peers. Remarkably, these omitted papers uniformly showed small or no differences (parent, teacher, child, peer) UNLESS the CI directly affected the child’s central nervous system (CNS; i.e., brain tumors, NF1).

An additional note regarding inclusion of studies. Following the framework used by the authors in the initial meta-analytic review, we did not include papers in our search focusing on children with injuries or disabilities. Martinez et al. correctly note that not including papers within these two domains (injuries: closed head injury, burns, etc.) or disabilities (cleft-palate?) is a major limitation. We would add that excluding children with acquired injuries that require long-term care is extremely arbitrary when considering linkages between medical challenges and a child’s social functioning. How would the pathways between illness/insult and social competence vary for a child with a moderate-severe closed head injury versus a child with a brain tumor? Both emerge relatively suddenly, require long-term care, disrupt neurobiological processes, and so on. We were also not clear how the authors define a disability. For example, is sickle cell disease (SCD) a disability (the review includes these children) or CI? What about NF1 or cleft palate, are these disabilities? What is the difference between a disability and a CI? Are problems such as attention deficit hyperactivity disorder, a lifelong, chronic disorder (see Richters et al., 1995) considered a CI? These questions are not about idle issues; they represent the many crucial questions that need to be resolved in the study of how CI affects social competence.

**Conceptual and Theoretical Issues: Alternative Heuristic Models**

Although Martinez et al. discuss some conceptual and theoretical issues related to the social functioning of children, they spend little time integrating these issues into their meta-analysis in terms of variables selected for analyses or outcomes. We believe that a visual heuristic (Figure 1; from Yeates et al., 2007) provides an opportunity for pediatric psychologists to consider essential process-oriented elements related to how children get along with peers; how peer relationship outcomes are measured; and potential interventions based upon data. Such a visual model offers greater specificity regarding targets for data collection and potential interventions. While the Yeates et al. model highlights CI or insults that impact the child’s brain, we suggest that the insult-related risk and resilience factors highlighted in this model might be considered more broadly by pediatric psychologists. For example, does the child miss school or the opportunity to interact with peers in outside activities resulting in poor social problem solving skills or loss or friends? Does the illness cause chronic fatigue resulting in changes to self perceptions, less aggression, more isolation? The type of insult and severity of insult can be independently evaluated (i.e., medical record review) and compared to data from peers, teachers, parents, and so on. It is important to note that we do not recommend evaluation of the severity of CI by child or parent report, rather we believe that independent sources of data provide a more compelling story.

While the majority of these efforts have not yielded significant linkages between independent measures...
(medical chart) related to CI as an insult and social functioning, this is not the case for insults that involve the child’s CNS. The work of Vannatta, Gerhardt, Wells, and Noll (2007) shows clear correspondence between independent measurement of the severity of insult to the child’s CNS and their functioning with peers for children with cancer (see also Noll et al., 2007; Yeates et al., 2007). We focus on this issue of type of insult and severity of insult because in pediatric psychology considerable effort has been made to establish linkages between illness severity and social competence. Understanding this process allows for better identification of children at risk as a group, and a clearer focus on pathways between illness/truma and social functioning rather than an what would be obtained from an assessment of broad band outcomes. Note that data focusing on children with cancers that do not have primary CNS involvement (i.e., Noll et al., 1999) appear to have very different social functioning (social interactions and social adjustment) than those children with primary CNS tumors (brain tumors) (i.e., Vannatta, Gartstein, Short, & Noll, 1998; Vannatta et al., 2007).

Combining these two groups of children obfuscates potential linkages between disease and outcomes. The same might occur for studies that included children with SCD who have had overt strokes and children with SCD who have not such an event.

The Adequacy of the Organizational Procedures Used to Categorize Variables

From an outcome-oriented perspective, we appreciate that all data from one source might conveniently be combined to create one ES. This practice with school data is problematic. The authors specifically state that the Revised Class Play (RCP) is a sociometric measure—it is not. Data from peers are typically considered to measure two primary dimensions of social functioning: (a) what is a child like? and (b) is a child liked? (Parker & Asher, 1987). To assess the former, measures like the RCP provide critical information about affiliative, aggressive, and isolated behaviors (Figure 1). Learning about these dimensions of social behavior fits perfectly into the social

Figure 1. An integrative, heuristic model of social competence in children with brain disorder (Yeates et al., 2007, with permission).
interaction portion of the Yeates et al. model and suggest specific targets for an intervention. To assess whether children are liked, sociometric tools (Best Friend Nominations, Like Ratings) are utilized. (See Bukowski, Cillessen, & Velasquez (2012) for a discussion of how peer assessments work and what they measure.) While there is often correspondence between social behavior and social acceptance, these are very different constructs. Within the Yeates et al. model, sociometrics would fit in the social adjustment domain-perception of others.

A final note related to school data. We were unclear how the broad set of measures taken from peer assessment and sociometric measures might be combined to create one ES. Our own work typically included the RCP (3–4 dimensions), Best Friend Nominations, and Like Ratings. Given the broad conceptual variations between the measures produced by these techniques and the breadth of the functional significance associated with these measures, it is reasonable to ask whether important variance was lost by the use of heavily aggregated scores. Correspondence between the present authors and Martinez et al. was directed at clarifying data used from one of our papers (Noll, Ris, Davies, Bukowski, & Koontz, 1992) that had been included in their meta-analysis.

We attempted to compute the reported ESs from the RCP-teacher for children with cancer, brain tumors, and SCD (basically we attempted to replicate what was reported in the Martinez et al., Supplementary Table). When we were unsuccessful, Martinez et al. explained that for the RCP, only one dimension (Leadership) was used to estimate the ES from the measure. While the leadership dimension of the RCP fits into the Yeates et al. model (affiliative) and follows the defining elements that Martinez et al. stipulate, using only the RCP leadership score and omitting descriptions from the RCP of aggressive or withdrawn social behaviors misses essential elements of a child’s social reputation. From a psychometric perspective, while we now have considerable data regarding the stability and predictive validity of RCP roles related to aggression or withdrawn behaviors (Hymel, Rubin, Rowden, & LeMare, 1990; Morison & Masten, 1991; Parker & Asher, 1987; Rubin, Bukowski, & Parker, 1998), little is known about the stability and validity of the RCP leadership domain.

This example serves as a cautionary note regarding the practice of combining data to create a single aggregated outcome measure. We have made this same mistake. In 1992 (Noll et al., 1992), we (Noll and Bukowski) combined data from three groups of children with CI (cancer, brain tumors, and SCD) in an attempt to increase power. For the three groups of children combined, the ES for RCP-teacher nominations for leadership was –.01. When you looked at individual groups of children with CI, a different picture emerges (cancer ES = .72; brain tumor ES = –.36; SCD ES = –.48).

Finally, while Martinez et al. decided to use the leadership dimension of the RCP as a single indicator of social competence from the RCP, our hypotheses have focused on the withdrawn dimension. No hypotheses were made for leadership because there was no literature regarding this positive dimension of social functioning for children with CI. When considering a model such as the one proposed by Yeates et al., the omission of problematic dimensions (aggressive, withdrawn) is troublesome since social interventions typically do not focus on enhancing leadership skills as a methodology for bootstrapping to reduce aggressive or withdrawn behaviors.

**Strength and Clarity of Empirical Justifications**

Aside from the questions that can be raised about the validity of the general conclusion drawn from the results of a meta-analysis, one can ask questions about specific conclusions or interpretations. One set of conclusions concerns the presence of variability in the more general effects that can be traced to demographic categories such as gender, race, and ethnicity. To assess the effects of these forms of demographic differences, Martinez et al. needed to use a very indirect form of ES. They assessed whether observed differences between studies were due to differences between them in the gender, racial, or ethnic composition of the overall samples. One presumes that this method was used due to a lack of more direct indices of these effects-data linked to individual children. For the present time, it is hard to know whether their conclusion that gender, race, and ethnicity do not matter for the effects of CI should be accepted.

An additional conclusion that deserves closer scrutiny is the claim in the meta-analysis for the superiority of parents’ ratings to peer ratings of social competence in “younger” children with CI. This conclusion appears to be based on the observation of stronger effects for analyses that used parent ratings than for those that used peer assessments and general recommendations regarding informant discrepancies (De Los Reyes & Kazdin, 2005). The authors’ interpretation is based the implicit claim that if an effect is observed with one type of measure but not with another then the measure which it was found must be a better form of assessment. For this argument to be compelling one must assume that these forms of measurement are equally
valid (i.e., the parent measures have the same validity as peer measures). This assumption is unlikely to be tenable in this circumstance.

There is a strong database showing that peer nomination procedures used with school-aged children and adolescents provide exceptionally reliable and valid measures (Bukowski & Hoza, 1989; Bukowski et al., 2012; Conti, Galeotti, Mueller, & Pudney, 2009; Parker & Asher, 1987). Additionally, the majority of studies obtaining data from peers do not mention the child with CI when collecting data in classrooms. This practice is followed to ensure that the target child is not stigmatized and to ensure that data are obtained from multiple respondents without “focusing” on the child with CI. This practice minimizes or eliminates the potential for a focusing illusion (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2006; Schkade & Kahneman, 1998; Smith, Schwarz, Roberts, & Ubel, 2006).

The parents of children who are ill (and clinicians who work with these children) are likely to be fully aware of the breadth of the potential physical and psychosocial risks associated with their child’s condition. Accordingly, they may be highly susceptible to a focusing illusion which draws their attention to easily observed characteristics (peer to peer bantering) that may be seen as normal by the parents of other children but to which these parents interpret as indices of maladjustment and distress (teasing and bullying). By assigning extra weight to what other parents might see as minor incidents the parents of chronically ill children may exaggerate the degree to which their children show evidence of social dysfunction.

Findings from parents’ reports in the Martinez et al. review often used widely used measures such as the Pediatric Quality of Life Inventory (PedsQL) or Child Behavior Checklist (CBCL). Note that we believe that while these standardized measures (PedsQL, CBCL) have scales labeled as social competence and extensive norms, data from these measures have not been linked to information from peers at school. The CBCL has extensive data focusing on the reliability and validity of this measure (Achenbach & Rescorla, 2011). Unfortunately, none of the validity data examines linkages between parent (CBCL) or teacher reports on the Teacher Report Form and data from peers. Utilizing data from our Cincinnati laboratory, we examined simple correlations between CBCL Social Subscale within the overall Social Competence Scale and measures of social acceptance from peers (Table I) for children with CI and comparison peers without a CI. There was remarkably low agreement between mothers and peers, or fathers and peers. While the CBCL emerged showing strong effects in the meta-analysis, our data would suggest these data show meager linkages to actual peer relationships at school. Note that similar findings have been reported for the Social Skills Rating Scales (SSRS; Parent and Teacher) from the NIMH collaborative multisite Multimodal Treatment Study of Children with ADHD. Correlations between the SSRS variables and the reports of peers range from .01 to .27 (Hoza et al., 2005). Clearly, adult reports of social functioning are quite distinct from the perspective of peers. These findings highlight the need to remain cognizant of the source of information (parents, teachers, peers, child self-report) before intervening.

Note that while some in the pediatric psychology community may be reluctant to go to schools, we would add efficiency and applicability to this list of reasons for using data obtained from peers. Peer ratings are easy to collect, code, score, and use. Current work in our laboratory utilizes net book computers so that data management from a class of 30 children requires less than 15 min. They are amenable to multiple forms of statistical analysis. When data are collected in a classroom, a “natural” comparison point might be a same race/gender classmate who is closest in date of birth. The relative simplicity of their administration in conjunction with the power and depth of the measures they create has led to their use in a wide range of

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<th>Peer report measures</th>
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<th>CBCL-Social Father Report</th>
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<td>Chronic illness, n = 305–309</td>
<td>Comparison, n = 309–312</td>
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<td>Best Friend Nominations</td>
<td>0.23***</td>
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<td>Reciprocated Friendships</td>
<td>0.16**</td>
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Note: CBCL = Child Behavior Checklist.
*Pearson’s r reported.
*b = z test comparing correlations between groups (chronic illness versus comparison), two-tailed tests.
*p < .05, **p < .01, ***p < .001, two-tailed tests.
contexts (e.g., school classrooms, summer camps, and data from at least 40 countries.)

The Utility of the Conclusions to Stimulate Further Research (i.e., Clinical Trials to Remediate Difficulties)

An interest in theory and process leads us to end our commentary by highlighting the implications and directions for future research section of the Martinez et al. (2011) review. We have already commented on the role of illness type and several papers specifically linking independent sources of information (i.e., medical chart) and CNS involvement (Noll et al., 2007; Vannatta et al., 2007; Yeates et al., 2007) to children's social competence with peers at school. We agree with Martinez et al. that children with neurological disorders have significant deficits and the greatest risk. Emerging evidence suggests that obese children are at risk.

Within the domain of data from peers for obese or children with CI and neurological impairment, some work has specifically attempted to identify mediators when differences are identified between children with CI and comparison peers (i.e., Noll et al., 2007; Zeller, Reiter-Purtill, & Ramey, 2008). Unfortunately, none of this work utilized social information processing, cognitive-executive functioning, or social affective functioning as potential mediators of the link between CI and social deficits. Potential mediators that have been identified include a child's appearance and/or athletic ability for obese children (Zeller et al., 2008), and for children with SCD missing a lot of school and being sick a lot (Noll et al., 2007). These data specifically focus on problems based on peer data and potential mediators, but the findings suggest very different targets and pathways for interventions. It becomes extremely clear that before there are recommendations for interventions, we need to understand much more about the target of the intervention (i.e., no best friends, withdrawn) and what has been learned about possible mediators.

Based on the results of this meta-analysis, we are extremely cautious about the recommended use of social skills interventions for children with CI, even those with neurological disorders or obesity. First, there are no data reported in the meta-analysis or from papers not included (based upon our reviews of the literature) showing specific problems with social information processing for children with CI. We agree with Yeates et al. (2007) that an appreciation for the actual social interactions of children cannot be accomplished using conventional rating scales or questionnaires—it requires direct observation or peer nominations (i.e., RCP). Are children with CI isolated or aggressive? Do they have fewer friends? Are they less well liked? Do they have fewer reciprocated friendships? Along with an array of targets, dependent upon the CI, the mediators (pathways) may be different.

As the authors of the review note, even when including children with neurological deficits or obesity, ESs from child self-report were modest. While providing direct social skills training to children with CI may be an effective intervention for parental or teacher concerns, we are troubled about possible iatrogenic effects when these interventions are universally provided to children, especially when Martinez et al. note that ESs from child self-report are small, and from teachers and peers differences are even smaller. Based on the findings from this meta-analysis, it seems feasible that the majority of children with CI get along reasonably well based on peer reports and feel good about themselves socially, based on self-reports. Suggesting to parents that these children will benefit from learning how to interact socially has the potential to initially increase parental concerns and also to cause children with CI to doubt their own social competence. Most notably, we are concerned that if the primary concern is based upon the reports of parents, and if evidence for these difficulties from the perspective of the child's self-report, teachers, or peers is absent then the justification for the intervention is at best weak and it could be potentially harmful (Lilienfeld, 2007).

Summary and Suggestions for Future Research

We are extremely appreciative of Martinez et al. for taking the time to complete this meta-analysis. We hope this starts a critical discussion that is central to developmental health psychology. We were extremely impressed by their quick responses to our queries via email. Most importantly, their paper demonstrates significant advances in our understanding of the peer relationships of children with CI. While the field has moved considerably to identify groups of children with CI at highest risk (neurological disorders, obesity) and specific targets (isolation, friendships), more work needs to be done identifying disease specific pathways, and establishing interventions designed to alter these pathways and outcomes.

Work with actual peers within a heuristic model allows for collection of outcome data related to social competence, and collection of potential meditational data that could provide specific suggestions for interventional
targets. For children with neurological disorders or obesity, who genuinely appear to be at risk, there is little evidence that direct training of social skills outside of school impacts a child’s status with peers at school.

Recent work has suggested that a powerful strategy might be to utilize peers as the target of the intervention for children who have a difficult time making friends. For example, a peer-mediated intervention utilizing classmates of children with autism spectrum disorders (ASDs) might be helpful for children with neurological disorders (Kasari, Rotheram-Fuller, Locke, & Gulsrud, 2011). Without directly identifying the target child, a brief intervention was provided to typical peer classmates. They were taught strategies to help classmates who have difficulties with friendships and are isolated (specific targets). Findings for children with ASD suggested that this brief peer intervention resulted in significant improvements in social network centrality, friendship nominations, and teacher ratings. Most significantly, these improvements showed evidence of sustainability from one school year to the next.

Supplementary Data
Supplementary data can be found at: http://www.jpepsy.oxfordjournals.org/

Conflicts of interest: None declared.

References


