A Systematic and Quantitative Review of Interventions to Facilitate School Reentry for Children With Chronic Health Conditions

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Objective To conduct a systematic and quantitative review of research on the effects of school reentry interventions for children with chronic health conditions. Methods This analysis examined 2 primary outcomes: increasing illness- or injury-specific knowledge among teachers or healthy peers and enhancing positive attitudinal change toward an ill or injured child. A secondary analysis examined any change in the ill or injured child’s global self-worth following the intervention. A random-effects model was used in all analyses, and effect sizes were analyzed using heterogeneity tests. Results Larger effect sizes were found for increases in knowledge than for enhancing positive attitudinal changes (i.e., mean ES for knowledge: 0.84–0.88; mean ES for positive attitudinal change: 0.68), and larger effect sizes were found for teachers than for healthy peers in both analyses. Significant heterogeneity was found between groups (i.e., teachers vs. healthy peers) and within groups in both analyses. Results of the secondary analysis indicated a medium effect for improvements in global self-worth (i.e., mean ES = 0.24). Conclusions This analysis provides support for the effectiveness of school reentry interventions and highlights the critical need for more empirical work in this area.

Key words childhood injury; chronic illness; school integration; school reentry; systematic review.

Introduction
Advances in modern medicine have increased the chances that children who become critically ill or injured will survive. These children are likely to return to school and the community and are expected to reintegrate into their predisease-onset lives. Although their immediate illness may be resolved or their injury healed, there are often lasting effects of these bouts with chronic illness or injury. Since going to school is a primary task of childhood, reentry into the school system can be a major undertaking for children with chronic health conditions.

In 1989, Riley-Lawless called for a need to “evaluate the effectiveness of specific programs and to compare different types of programs” in order to make the school reentry process as easy as possible for children diagnosed with cancer (p. 93). Additionally, the Leukemia Society of America identified the development and evaluation of school reentry programs as a health priority in the late 1990s (McCarthy, Williams, & Plumer, 1998). Nonetheless, a gap still exists in the scientifically based literature regarding these school reentry programs. Brown reiterated this necessity in his Presidential Address to the Society of Pediatric Psychology, arguing that empirical data are needed to further the knowledge base and improve school reentry programs (Brown, 2002). Several authors have proposed models for successful reentry programs (e.g., Harris, 2009; Power, DuPaul, Shapiro, & Kazak, 2003) and pediatric nurses have been working on school reentry interventions since the 1980s (McCarthy et al., 1998). However, few programs have been described and analyzed in the literature. The programs that have been examined tend to focus on cancer, which may be a logical emphasis given that the 5-year survival rate for children with cancer is 80% (American Cancer Society, 2010),
making the situation very likely that these children will return to school and resume “normal” pre-illness activities in the context of a life-threatening illness. Other types of school reentry interventions are less noticeable in the literature, although there has been some discussion of reentry models for other health conditions such as pediatric organ transplant (e.g., Weil, Rodgers, & Rubovitz, 2006).

**Interventions to Facilitate School Reentry**

As noted by Prevatt, Heffer, and Lowe (2000), most programs take the form of school personnel workshops, peer education programs, or comprehensive programs. School personnel workshops are typically very brief and aim to increase disease- or injury-specific knowledge and decrease anxiety surrounding the return of an ill child to the classroom. Peer education programs similarly disseminate age-appropriate knowledge about a specific health condition and discuss needs and fears of the ill child and of the class. More comprehensive programs tend to focus on increasing collaboration between school personnel, hospital personnel, and the family, and may also include components of school personnel workshops and peer education programs. For example, Power et al. (2003) proposed a multisystemic model for school reentry whereby the family, school, and health care system work together to facilitate a smooth reentry process. Subsequent work by Harris (2009) also highlighted the importance of a more comprehensive approach to school reintegration, calling particular attention to the need for effective consultation—liaison. In addition to being informed about all of the child’s needs, the consultant takes responsibility for communicating relevant information to the three environments in which the child exists: the home, the hospital, and the school (Harris, 2009).

**Rationale for Current Study**

Approximately 10–30% of the children will be affected by some type of chronic illness or physical health problem at some point in their lives. Despite a myriad of positive coping strategies and support, these children are still at risk for a wide range of psychosocial difficulties compared to healthy children (Paediatric Psychology Network United Kingdom, 2010). In general, research findings suggest that school reintegration programs may have some benefits for survivors, their healthy peers, and school personnel (Prevatt et al., 2000). However, the literature has not been well integrated, and there is no summative indication that school reentry programs are effective or that a specific type of intervention is more effective than others. In order to design more effective interventions, a comprehensive analysis of the existing literature is needed to improve understanding of school reintegration programs and determine areas where research is lacking.

Although previous writers have provided descriptive summaries, no comprehensive analysis apparently exists that empirically synthesizes previous school reentry programs. The current quantitative review includes reports obtained from a broad search strategy to examine the current knowledge base related to school reentry and determine whether school reintegration programs are effective in terms of increasing illness-specific knowledge and decreasing anxiety, worry, and other negative emotions among teachers and healthy peers when an ill or injured child returns to school. These outcomes are reflective of what has been measured by the research in this area (e.g., Benner & Marlow, 1991). It is expected that school reentry interventions will be associated with an increase in illness or injury-specific knowledge and a decrease in negative emotions and attitudes surrounding the return of the child to school. In addition to reflecting the current available literature, it is logical that decreased negative emotions and/or increased willingness to interact with the ill child would lead to positive outcomes for the child upon reintegration into his/her classroom.

**Methods**

**Search Strategy**

Several search strategies were employed to conduct a thorough and comprehensive search of the literature. First, a search comprised a combination of two keywords joined by the word “AND” was conducted in several academic databases. The databases searched were: PsycINFO, PubMed, ERIC, CINAHL, EMBASE, and ProQuest Dissertation and Theses. Google Scholar was initially included in the list of databases but was dropped after preliminary searches yielded almost 1,000 articles per search term combination, the majority of which was irrelevant and none of which met inclusion criteria. The first term was childhood illness, chronic illness, childhood chronic illness, disease, childhood disease, injury, or burn. The second term was school reentry, school reintegration, or school intervention. A wildcard (*) was used to ensure that variations of the terms were also identified in the literature search. Upon completion of this search, a secondary search was conducted using the terms cancer, sickle cell anemia, and HIV/AIDS as the first term. This decision was made because the initial round of searches yielded a significant amount of returns for these specific illnesses. In total, these search terms produced 36 search combinations. Each combination was searched in each of the aforementioned databases.
As modeled by previous meta-analyses in the field of pediatric psychology (e.g., Wu & Roberts, 2008), additional search strategies were employed. Reference sections of each study identified by the literature search were scanned for other potentially eligible studies. The reference sections of previously identified relevant articles and chapters (e.g., DuPaul, Power, & Shapiro, 2009; Madain-Swain, Katz, & LaGory, 2004; Prevatt et al., 2000) were also searched in this manner. Second, all articles identified electronically were “followed forward,” meaning that all articles citing the initial study were examined for potential inclusion. Third, an electronic message was sent to the listservs of Division 16 (School Psychology), Division 37 (Society of Child and Family Policy and Practice), Division 53 (Society of Clinical Child and Adolescent Psychology), and Division 54 (Society of Pediatric Psychology) requesting relevant published or to-be-published studies, as the issue of school reentry is relevant to their members. Fourth, conference proceedings of previous pediatric psychology conferences (i.e., 1987–2011) were searched to identify any unpublished works. Finally, experts were identified through previous publications and were sent inquiries about missing studies that might be relevant.

**Inclusion Criteria**

In order to be included in the analysis, an identified study met the following provisions: (a) it is in English; (b) it is an intervention study, as opposed to a theoretical model or descriptive study; (c) the intervention is specific to an ill/injured child’s return to school; (d) the intervention targets school personnel, healthy classmates, or the ill/injured child; (e) there is a measurable outcome (e.g., increase in illness-specific knowledge and lessened anxiety surrounding the child’s return); and (f) effect size (ES) statistics could be calculated from results presented in the study. Studies were primarily excluded for being theoretical or descriptive or for failing to provide enough statistics to compute an ES.

**Coding of Studies**

A comprehensive coding protocol was designed in order to identify important information about each study. The principal investigator and a research assistant independently coded all articles, and a 91% reliability rating was obtained for descriptive and effect size variables. Any discrepancies were discussed until consensus was reached.

Coding first identified the type of intervention conducted in the study (e.g., peer focused, teacher focused, and integrated approach). Interventions were classified based upon intended audience (e.g., peers, school personnel, or parents) and intervention setting (e.g., in the child’s school, at the hospital, and at a conference). Intended audience was identified as an a priori moderator, with the assumption being that effect sizes may vary between teacher- and peer-focused interventions because of differences between these groups (e.g., age and level of education). Outcome measures were coded into the following categories: (a) increase in illness-specific knowledge; (b) decrease in illness-specific worries (e.g., fear and anxiety); (c) increased desire/willingness to interact with ill child; (d) indirect measures (e.g., ill child has increased attendance, ill child has less depressive symptoms); or (e) other. At the data analysis stage, (b) and (c) were used to represent attitudinal change. All of the following study characteristics were recorded, if available: (a) publication type; (b) year of publication; (c) sample size; (d) participant demographics (e.g., age, gender, socioeconomic status, and ethnicity); (e) illness targeted by intervention; and (f) intervention-specific information (e.g., length of intervention).

**Statistical Approach**

Given the limited sample size of the current study, two primary analyses were conducted in order to maximize the impact of the study results. Included studies typically used two measureable outcomes as indicators of effectiveness: increases in illness-specific knowledge and attitudinal changes. Thus, individual analyses were conducted for each outcome.

A limited number of studies (N = 4) also compared an experimental treatment group (e.g., social skills training + standard reentry procedure) with a control group (e.g., standard reentry procedure). Perhaps coincidentally, these studies tended to focus on outcomes specific to the ill or injured child (e.g., overall global self-worth). These studies were analyzed descriptively—a mean ES was calculated, but the results of this analysis are presented separately from the primary analyses (i.e., increase in knowledge and attitudinal changes).

All effect sizes were computed using Cohen’s d.

\[ d = \frac{t_{\text{dependent}}}{\sqrt{N}} \]

Although repeated measures designs typically do present some unique threats to internal validity, the meta-analysis literature supports the inclusion of within-subject effect sizes when analyzed separately from between-subjects designs (e.g., Card, 2011; Lipsey & Wilson, 2001). Additionally, a formula accounting for dependent samples (i.e., pre- and posttest designs with the same sample) was used in order to eliminate any bias that may emerge as a result of repeated measures designs.\(^1\) For studies that utilized a different study format (e.g., control vs.
experimental), a standard calculation of Cohen’s $d$ was utilized. For studies that allowed for the computation of multiple effect sizes for a particular outcome (e.g., teacher and peer reports for knowledge gains), effect sizes were averaged in order to control for dependence and eliminate any bias (Card, 2011; Lipsey & Wilson, 2001). Since computational formulas are rarely reported in empirical articles, means and standard deviations reported by the original study authors were used to calculate effect sizes whenever possible, even when effect sizes were reported in the original study. Additionally, a stem-and-leaf plot was created to identify outliers, and any studies identified as extreme outliers (i.e., greater than 3 SDs from the mean) were excluded at this point (Lipsey & Wilson, 2001). Refer to Table 1 for specific descriptions of the studies included in each analysis.

After computing an initial ES, effect sizes were weighted in order to account for sample size. In order to compute the weighted ES, a standard error must be computed for each relevant, unweighted ES. In the case of a repeated measures sample (i.e., pretest–posttest), a correlation coefficient is needed in this calculation as a measure of interindividual stability over time (Card, 2011; e.g., test–retest reliability for a particular measure used to capture an outcome variable). Such a statistic is rarely reported in published works. In the case that a study did not include a correlation coefficient and a usable correlation coefficient could not be found elsewhere (e.g., in a manual for a particular measure), a range of standard errors were computed (i.e., using three different values for “r”—assuming a small, medium, and large correlation). Therefore, both primary analyses (i.e., increase in knowledge and attitudinal change) were computed three different times, and the mean ES results are presented as a range of possible values assuming different standard errors based upon correlation coefficient.

A heterogeneity analysis using the Q-statistic was computed for each ES in order to determine whether the variation in results was above and beyond what could be expected based upon standard error (Card, 2011). If the Q-statistic was significant, the sample was considered to be heterogeneous and a moderator analysis by target audience was performed. The moderator analysis essentially partitions $Q$ into $Q_{between}$ (i.e., heterogeneity between audience type) and $Q_{within}$ (i.e., heterogeneity within audience type). If $Q_{between}$ was significant and $Q_{within}$ was not, the difference could be attributed to audience type (Card, 2011; Wu & Roberts, 2008).

$$d = \sqrt{\frac{1}{n_1 + n_2}} \left( \frac{\bar{x}_1 - \bar{x}_2}{\text{SD}_{pool}} \right)$$

A random-effects model has been identified by the previous literature as the best way to control for bias resultant from differential weighting of studies based on sample size (Card, 2011; Schmidt, 2010). Although some have argued that a fixed-effect mean can be utilized in the absence of any heterogeneity, a random-effects model is the most appropriate choice and also allows for inferences to be made that extend beyond the present sample (i.e., articles included in this particular analysis). Given this fact, a random-effects model was used to compute mean effect sizes in all cases, regardless of the heterogeneity indicated by the Q-statistic.

Cohen (1988) provides the following suggested ranges for the interpretation of effect sizes, which will be used to draw inferences about the results of the analyses: small < 0.20, medium = 0.21–0.50, or large = 0.51–0.80. As modeled by Graves, Roberts, Rapoff, and Boyer (2009), 95% confidence intervals will also be computed for each group of effect sizes. If zero is included in the confidence interval, the effect size will not be considered statistically significant.

**Results**

**Study Characteristics**

Upon completion of the previously described exhaustive search process, 12 of the 1,617 identified studies were eligible for inclusion in this study. Eight studies examined knowledge and attitudinal change in teachers or healthy peers as outcome variables; of these eight studies, four targeted teachers and four targeted healthy peers. Four studies used a measure of the ill or injured child’s self-worth/self-esteem as an outcome variable. Ten studies were published reports, and two were unpublished dissertations. The journal articles were published between 1983 and 2007, and the dissertations were released to ProQuest Dissertations and Theses between 2004 and 2006. The majority of included studies ($N=9$) featured cancer as the target illness. One study featured Tourette Syndrome, one study examined Sickle Cell Anemia, and one study investigated burn injuries. In total, 494 healthy classmates, 176 ill children, and 443 school personnel were included in this analysis. Sample size varied greatly between studies, ranging from 25 teachers to 192 healthy classmates. The majority of the studies did not consistently report participant demographics. Of the eight studies that included participant age, the mean age for teachers was 35.4 (age range: 22–61), the mean age for healthy peers was 9.62 (age range: 7–15), and the mean age for ill children was 9.85 (age range: 5–17). For the six studies that reported ethnicity, the majority of the participants was Caucasian...
(N = 373). Other represented ethnicities were African American (N = 16), Asian (N = 8), American Indian (N = 4), Hispanic (N = 35), and other (N = 13). Of the nine studies that reported gender demographics, 330 were males (i.e., 32 teachers; 208 healthy peers; 90 ill children), and 385 were female (i.e., 60 teachers; 253 healthy peers; 72 ill children). Refer to Tables I and II for study demographics and effect size statistics.

Knowledge as an Outcome Variable

We hypothesized that participation in a school reentry program would be correlated with an increase in illness-specific knowledge. A heterogeneity analysis using the Q-statistic was conducted and significant heterogeneity was found for all three iterations of the analysis utilizing knowledge as an outcome variable (i.e., large standard error, moderate standard error, and small standard error). Q-statistics ranged from 61.61 to 117.42, and all values were significant at p < .005. Therefore, the random-effects model was used to compute mean effect sizes for knowledge as an outcome variable. Mean effect size values ranged from 0.84 to 0.88, indicating a large effect size for increases in knowledge for all three iterations of the analysis. Furthermore, 95% confidence intervals were computed for the overall mean effect size. The confidence intervals for the three iterations of the analysis assuming a small, medium, and large correlation coefficient were (0.83–0.94), (0.79–0.91), and (0.83–0.94), respectively. See Table III for results.

Target audience was identified a priori as a potential moderator or reason for significant variation above and beyond what is expected due to standard error. This decision was made because different audiences (e.g., teachers and healthy peers) may differ in several critical ways (e.g., age and experience with illness) that could impact one’s response to a reentry program. Additionally, the significant Q-statistic indicates the presence of heterogeneity, further supporting this moderator analysis. When Q was partitioned into $Q_{\text{between}}$ (heterogeneity between target audiences) and $Q_{\text{within}}$ (heterogeneity within target audiences), $Q_{\text{within}}$ ranged from 48.68 to 85.51 ($p < .005$) and $Q_{\text{between}}$ ranged from 12.93 ($p < .01$) to 21.96 ($p < .005$). This indicates significant heterogeneity within and between target audience, meaning that heterogeneity existed within-groups (within teachers and within peers) and between-groups. When mean effect sizes were computed for the intended audience of the intervention, effect sizes ranged from 1.13 to 1.15 for teachers [CI from (1.12–1.14) to (1.14–1.16)] and from 0.65 to 0.67 for healthy peers [CI from (0.64–0.65) to (0.665–0.669)]. According to Cohen’s interpretive guidelines (1988), this indicates a large effect for increases in knowledge for teachers and a medium effect for increases in knowledge for peers.

Attitudinal Change as an Outcome Variable

A second primary hypothesis was that school reentry programs would lead to positive attitudinal change among participants. A heterogeneity analysis using the Q-statistic was conducted and significant heterogeneity was found for all three iterations of the analysis utilizing positive attitudinal change as an outcome variable (i.e., large standard error, moderate standard error, and small standard error). Q-statistics ranges from 181.90 to 276.34, and all values were significant at p < .005. Therefore, the random-effects model was again used to compute mean effect sizes for positive attitudinal change as an outcome variable. Values for mean effect size ranged from 0.678 to 0.679, indicating

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Table I. Demographic Information for All Included Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Disease</th>
<th>Audience</th>
<th>Age Range</th>
<th>Overall, N</th>
<th>Male (%)</th>
<th>Caucasian (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treiber, Schramm, and Mabe (1986)</td>
<td>Cancer</td>
<td>Peers</td>
<td>–</td>
<td>192</td>
<td>49</td>
<td>93%</td>
</tr>
<tr>
<td>Holtz and Tessman (2007)</td>
<td>Tourettes</td>
<td>Peers</td>
<td>7–15</td>
<td>91</td>
<td>31</td>
<td>70</td>
</tr>
<tr>
<td>Kootz, Short, Kalinyk, and Noll (2004)</td>
<td>Sickle cell</td>
<td>Child</td>
<td>8–12</td>
<td>24</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Varni, Katz, Colegrove, and Dolgin (1993)</td>
<td>Cancer</td>
<td>Child</td>
<td>5–13</td>
<td>64</td>
<td>60</td>
<td>48</td>
</tr>
<tr>
<td>Girolami (2004)</td>
<td>Burn</td>
<td>Child</td>
<td>8–16</td>
<td>39</td>
<td>85</td>
<td>82</td>
</tr>
<tr>
<td>Katz, Rubinstein, Hubert, and Blew (1989)</td>
<td>Cancer</td>
<td>Child</td>
<td>5–17</td>
<td>49</td>
<td>39</td>
<td>53</td>
</tr>
</tbody>
</table>

Note. “—” = not reported in study.
a medium effect size for positive attitudinal change all three iterations of the analysis. Ninety-five percent confidence intervals for the iterations assuming a small, medium, and large effect were (0.63–0.72), (0.61–0.75), and (0.61–0.75), respectively. The confidence intervals did not include 0, further supporting the significance of these findings. See Table III for results.

Once again, target audience was identified a priori as a potential moderator, or reason for significant variation above and beyond what is expected due to standard error. When Q was partitioned into Q_{between} (heterogeneity between target audience) and Q_{within}, values for Q_{within} ranged from 25.60 to 77.89 and Q_{between} ranged from 156.30 to 198.44. All values of Q were significant at p < .005, indicating that there is significant variability within and between target intervention audience. When mean effect sizes were computed, effects ranging from 1.053 to 1.089 for positive attitudinal change were found for teachers [CI from (0.90–1.20) to (0.99–1.19)], and effects ranging from 0.325 to 0.326 were found for positive attitudinal change for healthy peers [CI from (0.24–0.41) to (0.28–0.37)]. According to Cohen’s interpretive guidelines (1988), this indicates a large effect size for attitudinal change among teachers, and a medium effect size for attitudinal change among healthy peers.

Secondary Descriptive Analysis

A small number of studies (N = 4) utilized an experimental design (control vs. treatment condition) to examine effects of reentry programs on the ill child. A separate analysis was conducted on these reports, using increases in self-esteem/global self-worth as an outcome measure. Significant heterogeneity was not found in this sample (Q = 5.498, p < 0.1), and a random-effects model was used to compute a mean effect size in order to account for any undetected heterogeneity masked by the small sample size (Card, 2011). The mean effect size for this analysis was relatively small [d = 0.24, 95% CI (0.03–0.45)]. See Table III for results.

Publication Bias

In order to account for any publication bias, a modification of Rosenthal’s fail-safe N, modeled by Card (2011) was computed. This identified the number of unpublished nonsignificant studies that would need to exist in order to reduce the mean effect size of the outcome measures to 0.1 or the minimum effect size that would still be considered meaningful. For knowledge as an outcome variable, 59–62 undiscovered studies would be needed to trivialize the overall effect size for all three iterations of the analysis. For attitudinal change as an outcome variable, 46 undiscovered studies would be needed to trivialize the overall effect size for all three iterations of the analysis. To reduce the effect size to a moderate 0.4, about 10

Table II. Effect Size Statistics for All Analyses

<table>
<thead>
<tr>
<th>Study</th>
<th>Weighted Mean ES for Knowledge</th>
<th>Weighted Mean ES for Attitudes</th>
<th>Weighted Mean ES for Global Self-worth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pallmeyer, Saylor, Treiber, Eason, Finch, and Carek (1986)</td>
<td>r = .1 1.96 3.75 5.21</td>
<td>r = .9 1.15 1.32 2.23</td>
<td>–</td>
</tr>
<tr>
<td>Baskin, Saylor, Furey, Finch, and Carek (1983)</td>
<td>r = .1 7.72 8.19 9.59</td>
<td>r = .9 1.83 2.04 3.44</td>
<td>–</td>
</tr>
<tr>
<td>Delong (1999)</td>
<td>r = .1 4.30 4.1 3.87</td>
<td>r = .9 0.57 0.62 0.96</td>
<td>–</td>
</tr>
<tr>
<td>Treiber, Schramm, and Mabe (1986)</td>
<td>r = .1 4.70 4.51 4.56</td>
<td>r = .9 0.85 0.92 1.44</td>
<td>–</td>
</tr>
<tr>
<td>Benner and Marlow (1991)</td>
<td>r = .1 2.91 2.72 2.63</td>
<td>r = .9 0.98 1.04 1.55</td>
<td>–</td>
</tr>
<tr>
<td>Ross, Dierens, and Turney (1989)</td>
<td>r = .1 6.37 5.95 5.75</td>
<td>r = .9 4.84 5.16 7.84</td>
<td>–</td>
</tr>
<tr>
<td>Dubowy, Rieger, Songer, Kleinmann, Lewandowski, Rogers, and Silber (2006)</td>
<td>r = .1 8.88 9.29 10.62</td>
<td>r = .9 3.49 3.84 6.12</td>
<td>–</td>
</tr>
</tbody>
</table>

Note. *r* = not reported in study.

*It was possible to find a correlation coefficient for knowledge for this study, so ‘*r*’ was constant in all three iterations of the analysis.

Using a mean effect size in order to account for any undetected heterogeneity masked by the small sample size (Card, 2011). The mean effect size for this analysis was relatively small [d = 0.24, 95% CI (0.03–0.45)]. See Table III for results.
undiscovered studies would have to exist for knowledge as an outcome, and 6 undiscovered studies would be needed for attitudinal change as an outcome variable. Given the exhaustive search strategies employed, it is highly unlikely that this number of studies remains unearthed.

The same modification of Rosenthal’s fail-safe N was used for the secondary, descriptive analysis. Six undiscovered studies would be needed to decrease the overall effect size for global self-esteem/self-worth to 0.1. Again, in light of the search strategy, six studies are unlikely to remain undetected.

Discussion

As hypothesized, results of this quantitative review provide support for the effectiveness of school reentry programs in terms of increasing specific knowledge and enhancing positive attitudinal change. Overall, larger effects were found when knowledge was examined as an outcome variable than when positive attitudinal change was examined. Additionally, larger effects were found for interventions targeting teachers than for interventions targeting healthy peers for both increases in knowledge and positive attitudinal change.

The previous literature has suggested that children as young as five can be taught specific factual information about certain health conditions (Binnie & Williams, 2002; Myant & Williams, 2005). Given these findings, it seems logical that participation in a school reentry intervention would be expected to correlate with large increases in knowledge, particularly when the intervention program contains specific information about unfamiliar illnesses (e.g., cancer and sickle cell anemia). Additionally, information acquisition is easier to measure than other outcomes (e.g., positive attitudinal change), which may be partially responsible for the large effect size for increase in knowledge.

Previous research on disability and illness suggested that older children are significantly more accepting of peers with chronic health conditions than younger children (e.g., Kister & Patterson, 1980; Royal & Roberts, 1987). Unfortunately, small sample size and inconsistent reporting across studies disallowed a moderator analysis using child age as a predictor. Although the moderator analysis performed (i.e., teachers vs. healthy peers) could be assumed to partially account for age, numerous other confounding factors (e.g., level of education) limit any inferences based solely on age. Despite the finding of heterogeneity between and within groups, the difference in the magnitude of effect sizes between teachers and
healthy peers does provide some guidance as to which group of individuals learns the most as a result of a school reentry intervention. This difference in effect sizes (i.e., $d = 1.13–1.15$ for teachers; $d = 0.65–0.67$ for healthy peers) may indicate that certain elements of school reentry interventions (e.g., format of workshop and materials provided) should be tailored based upon the target audience.

There were very large differences between attitudinal change for teachers and attitudinal change for healthy peers, which is a particularly interesting finding. This finding may indicate that, although children are capable of learning novel information about unfamiliar illness, this new knowledge is not necessarily correlated with decreased fear, worry, or desirability to interact with the healthy peer. Previous research has demonstrated that, even as children acquire specific factual information about certain diseases, they continue to hold some misconceptions (Gelman & Raman, 2007; Myant & Williams, 2005). For example, evidence suggests that young children overextend their notions of contagion, often assuming that noninfectious diseases can be spread in the same fashion as infectious diseases (Kister & Patterson, 1980). Although factual information may cause teachers to feel more confident and better able to handle the return of an ill child, peers may not be able to make these same connections between knowledge, attitudes, and behavioral intentions. This consideration may be reason to consider an additional component of school reentry programs for healthy peers, designed specifically to address personal or social interactions with and concerns about the ill or injured peer. While increased knowledge may lead to a heightened understanding of the ill or injured child’s experiences, peer relationships are also an essential component of any child’s school experience. In order for a peer-focused school reentry program to be most effective, attitudes might be plausibly addressed separately from specific facts. For example, children may still worry about playing with or talking to the ill or injured child, despite possessing factual information about contagion. To alleviate these fears, a component of the intervention could focus on brainstorming activities to engage in with the ill or injured child, or appropriate conversation starters. Additionally, future research could explore concerns typically held by healthy peers, and these concerns could be incorporated into future interventions. Relatedly, interventions could explicitly attend to specific concerns expressed by participating children.

The results of this study should be interpreted with some caution, given the small number of suitable studies and the fact that the majority of the studies meeting inclusion criteria were at least 15 years old. The age of the included studies is not of concern in and of itself, but it is of note that the lack of recently published empirical work is not commensurate with the amount of scholarly writing that has occurred on the topic in recent years. Although school reintegration is written about extensively (e.g., Harris, 2009), published empirical work in the area is not keeping up. As the percentage of children who will reenter school following an illness and injury continues to rise, empirically based evidence must be generated in order to increase understanding and best serve these populations. Results of this study are also limited by the data provided by the original studies, which further highlights the need to improve the quality of published work in this area. For example, studies that utilize an experimental and control group will be particularly valuable moving forward, in order to rule out the possibility that any positive effect found is due to an external factor (e.g., reading a newspaper article about an ill child’s condition).

Perhaps related to the average publication date of the majority of included studies, only one study utilized the Internet to implement a reentry intervention for teachers (Dubowy et al., 2006). The Internet is currently used to implement a wide range of health interventions; consequently, there is reason to consider a web-based approach in terms of school reentry interventions. For example, illness-specific knowledge could easily be integrated into an animated game or story for young peers, or a brief tutorial could be created for teachers to access at their own convenience. In addition to increasing ease of access, an Internet-based intervention could easily allow for more “hands-on” exercises (e.g., problem-solving activities; short vignettes and questions) and complexity of presentation (e.g., individualized modules). The Internet has proven to be an exciting development for many facets of health service delivery and education, and there is reason to believe that school reentry models would benefit from inclusion of web-based components.

It is important to note that, although inclusion criteria allowed for interventions that targeted any type of childhood illness or injury, almost all of the studies focused on cancer. Although survivors of childhood cancer are a large group deserving of attention, theoretical and descriptive articles do suggest that school interventions exist for a range of illness and injury (e.g., Weil et al., 2006). Despite this, only one identified study targeted childhood injury (burns; Girolami, 2004), and two studies targeted illnesses other than cancer (Tourette Syndrome; Holtz &
Tessman, 2007; Sickle Cell Anemia; Koontz et al., 2004). Effective interventions for one type of illness might be equally effective for other illness types. The multisystemic model proposed by Power et al. (2003) broadly consists of four steps: strengthening the family, preparing the family for a school partnership, preparing the school or a partnership with the family and health care system, and engaging all three systems (i.e., family, school, and health care system) in efforts to plan and implement a successful entry. This intervention model could likely be tested with a wide range of chronic health conditions. However, this application cannot be assumed without empirical support. This assertion is not to suggest that empirical research related to school reentry and cancer should halt, but rather that research should expand to include other types of illness and injury.

Additionally, a smaller descriptive analysis using increases in self-esteem among ill children as an outcome variable was performed. Results of this analysis yielded a much smaller effect size than the effect sizes for increased knowledge and positive attitudinal change. Although this finding may initially be surprising, school reentry interventions do draw attention to a particular illness or injury. This heightened attention could lead to self-consciousness or worry on behalf of the ill or injured child. Future research should continue to examine long-term outcomes for the affected child; for example, more positive changes might occur after the classroom environment resumes its normal rhythm, and the focus shifts away from the ill child. Conversely, the possibility exists that an intervention drawing attention to a specific illness or injury could have unintended negative consequences for the ill or injured child (e.g., increased likelihood to be bullied). Future research must also examine the possibility of negative effects, especially before a school reentry intervention is implemented for a specific child. Relatedly, future research should identify empirically test and report on a primary outcome of successful school reentry interventions (e.g., increased competence or self-esteem in the ill child). Research in this area will help guide the field toward optimal outcomes to be targeted and will help steer the field toward “best practices” in terms of school reentry.

This systematic and quantitative review contributes to the school reentry literature in several valuable ways. First, empirical support has been gathered for the efficacy of school reentry programs. Although limited by a small sample size, this study suggests that empirically supported school reentry programs will ensure a smoother reentry for ill children, their teachers, and their healthy peers. Nonetheless, research needs to provide support for this educated “hunch,” making sure to demonstrate that school reentry programs have the intended positive effects, while examining for negative side effects. Future research must also adopt better reporting practices, in order to increase the accuracy of effect size computations and subsequent conclusions (i.e., eliminate the need to compute a range of possible values by reporting all necessary information). Additionally, researchers will want to focus attention on as broad a spectrum of illness and injury as possible, in order serve as many children as possible. This analysis serves as an important step in the process of strengthening the empirical body of literature surrounding school reentry programs.

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References

References marked with an asterisk indicate studies included in the quantitative analysis.


