In this review, 39 articles published in the *American Journal of Occupational Therapy* in 2008 and 2009 that were categorized in the practice area of children and youth were examined using content analysis. The most frequent type of research published was basic research, which accounted for 38.5% ($n = 15$) of the 39 studies published on the topic. Instrument development and testing and effectiveness studies were the next two most frequently noted research approaches, accounting for 25.6% ($n = 10$) and 20.5% ($n = 8$) of the studies, respectively. Among the 8 effectiveness studies, the level of evidence distribution was as follows: Level I, 3; Level III, 2; Level IV, 1; and Level V, 2. Quantitative studies were the predominant research paradigm used with 76.9% ($n = 30$) of the studies.

**Method**

A total of 39 studies that dealt with children and youth occupational therapy practice issues were identified using a content analysis approach to summarize the articles’ characteristics. Both the research design used in each published study and research category were identified. The six research categories included were (1) systematic review, (2) effectiveness study, (3) efficacy study, (4) basic research, (5) instrument development and testing, and (6) link between occupational engagement and health.

The level of evidence hierarchy system developed by the AOTA Evidence-Based Literature Review Project (Lieberman & Scheer, 2002) was used to classify the articles that fell under the effectiveness study.
category. Level I involves systematic reviews, meta-analyses, and randomized controlled trials. Level II uses two-group pretest–posttest designs in which control is present (e.g., cohort designs, case control studies) and randomization is not. Level III designs involve neither control nor randomization but instead use a one-group pretest–posttest design. Level IV includes single-subject designs, descriptive studies, and case series. Finally, Level V involves case study or expert opinion and is not based on systematic research methods.

Table 1 reports the research design, research category, and level of evidence of the effectiveness studies. A table summarizing each study is available online at www.ajot.aotpress.net [navigate to this article, and click on “supplemental materials”]). The study limitations listed in the online supplemental table are not exhaustive but simply highlight some of the major limitations of each study.

Results

Thirty-nine articles met the primary selection criteria of focusing on the practice area of children and youth. When the type of research published was considered, the most frequent category was basic research, accounting for 38.5% of all studies published in this practice area (Table 1). Instrument development and testing and effectiveness studies were the next two most frequently used research approaches. The two least frequent types of research approach used were efficacy studies and systematic–narrative reviews. No studies were published that dealt exclusively with the link between occupational engagement and health.

Quantitative studies were the predominant research paradigm, used in 76.9% of the studies (see Table 1). Only 12.8% of studies used a qualitative approach, and 10.3% of the studies used a mixed-methods approach.

When considering the levels of evidence exhibited by the effectiveness study category, Level I articles were the most common evidence published, accounting for 37.5% of all effectiveness studies (see Table 1). The next most frequent evidence study classifications were Level III and IV articles, which together made up 50% (n = 4). One study was classified as a Level IV article, and no studies were classified as Level II.

Discussion

Some notable trends emerged when the 39 child- and youth-oriented AJOT articles published in 2008 and 2009 were examined (see the online supplemental table). Gutman (2008a) reported that most occupational therapy research published in AJOT in 2008 addressed the practice areas of (a) children and youth; (b) rehabilitation, disability, and participation; (c) productive aging—a finding mirrored in Case-Smith and Powell’s (2008) systematic review of occupational therapy research over the past five years. (p. 620)

In AJOT’s 2008 volume, child- and youth-oriented studies accounted for 46% (n = 22) of all articles (Gutman, 2008a). Other studies of the occupational therapy literature have also found that pediatrics is a focus of journal publications (Brown, Rodger, & Brown, 2005; Case-Smith, 2007; Madill et al., 1989; Mountain, 1997; Ziviani, Behan, & Rodger, 1984).

Basic Research

As noted, basic research was the most common research approach in the 2008 and 2009 AJOT volumes (see Table 1). Gutman (2008a) noted that it “is important to the viability of the profession that occupational therapy researchers who engage in basic research choose research questions whose answers can be easily translated into clinical practice” (p. 621). Some of the basic research studies published results that could easily be translated to occupational therapy clinical practice (Bundy et al., 2008; Dickie, Baranek, Schultz, Watson, & McCormish, 2009; Engel-Yeger, Nagauker-Yanuv, & Rosenblum, 2009), whereas other studies in the basic research category presented findings that could serve as the foundation for knowledge needed to develop sets of guidelines for practice (e.g., Ashburner, Ziviani, & Rodger, 2008; Dickie et al., 2009; Engel-Yeger, Jarus, Anaby, & Law, 2009; Hilton, Crouch, & Israel, 2008). Some studies, however, were abstract or specialized; hence, the opportunity for

Table 1. Summary of Type of Child and Youth Practice Area Publications in the American Journal of Occupational Therapy in 2008 and 2009

<table>
<thead>
<tr>
<th>Type of research approach (N = 39)</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systematic–narrative review</td>
<td>1</td>
<td>2.6</td>
</tr>
<tr>
<td>Effectiveness study</td>
<td>8</td>
<td>20.5</td>
</tr>
<tr>
<td>Efficacy study</td>
<td>5</td>
<td>12.8</td>
</tr>
<tr>
<td>Basic research</td>
<td>15</td>
<td>38.5</td>
</tr>
<tr>
<td>Instrument development and testing</td>
<td>10</td>
<td>25.6</td>
</tr>
<tr>
<td>Link between occupational engagement and health</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Type of research approach (N = 39)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantitative</td>
<td>30</td>
<td>76.9</td>
</tr>
<tr>
<td>Qualitative</td>
<td>5</td>
<td>12.8</td>
</tr>
<tr>
<td>Mixed methods</td>
<td>4</td>
<td>10.3</td>
</tr>
</tbody>
</table>

Level of evidence of effectiveness studies (n = 8)*

I: Systematic reviews, meta-analyses, and randomized controlled trials
II: Two-group nonrandomized (e.g., cohort design, case control study, two-group pretest–posttest designs)
III: One-group nonrandomized noncontrolled trial (e.g., one-group pretest–posttest design)
IV: Single-subject design, descriptive studies, case series
V: Expert opinion, case reports, not based on systematic research methods

Note. N = 39.

*Level of evidence was recorded only for research in the effectiveness study category.
direct application in clinical contexts is somewhat limited (e.g., Bose & Hinojosa, 2008; Miller & Kuhaneck, 2008; Pierce, Munier, & Myers, 2009; Pizur-Barnekow, Kraemer, & Winters, 2008). Other studies were not useful because of methodological limitations (e.g., Bharadwaj, Daniel, & Matzke, 2009; Shoener, Kinnealey, & Koenig, 2008).

Bundy et al.’s (2008) study highlights the role that occupational therapists could have in modifying school yards and community playgrounds so that they promote engagement in creative play–related activities, whereas Hilton and colleagues’ (2008) study illustrates that occupational therapists need to be aware that children with high-functioning autism spectrum disorders may have difficulties related to out-of-school participation. Ashburner et al.’s (2008) work is also germane to clients with autism spectrum disorder, indicating that certain sensory processing patterns (e.g., sensory underresponsiveness and sensory seeking) of primary school-age children may be related to academic underachievement. Dickie et al.’s (2009) study dealt with the sensory processing issues of school-age children with autism but instead used a qualitative approach in which the parents were interviewed. Reynolds and Lane (2009) involved the issue of sensory overresponsivity and anxiety in children with attention deficit hyperactivity disorder.

Miller and Kuhaneck’s (2008) study appears to be abstract in nature; they analyzed the choice of specific play activities for children and found that “fun” was at the core of these choices. The study reported by Pizur-Barnekow et al. (2008) explored the visual behavior of infants in response to synchronous and asynchronous stimuli, but the applicability to day-to-day occupational therapy practice of this study’s results is not obvious. The case report published by Shoener et al. (2008) and the study by Bharadwaj et al. (2009) had several methodological flaws and are thus not readily generalizable to clinical practice.

Instrument Development and Testing and Effectiveness Studies

Two other common research approaches used in a sizable proportion of studies published in AJOT in 2008 and 2009 were instrument development and testing and effectiveness studies. In Gutman’s (2008a) review, effectiveness studies accounted for the largest percentage (33%) of types of research; instrument testing (26%) and basic research (22%) were also noted as frequent research approaches. In the 2008 and 2009 AJOT volumes, a variety of instruments appropriate for use with children and youth were investigated, including the Developmental Test of Visual Perception–2nd edition (Hammill, Pearson, & Voress, 1993; used in Brown, Rodger, & Davis, 2008), Sensory Over-Responsivity Scales (Schoen, Miller, & Green, 2008), Test of In-Hand Manipulation (Pont, Wallen, Bundy, & Case-Smith, 2008), Handwriting Proficiency Screening Questionnaire (Rosenblum, 2008), Sensory Integration and Praxis Tests (Ayres, 1991; used in Asker, Parham, & Knox, 2008), Modified Melbourne Assessment for Children (Johnson, Randall, Oke, Byrt, & Bach, 1994; used in Randall, Imms, & Carey, 2008), Revised Knox Preschool Play Scale (Knox, 1997; used in Jankovich, Mullien, Rinear, Tanta, & Dietz, 2008), School Function Assessment (Hwang & Davies, 2009), Children’s Kitchen Task Assessment (Rocke, Hays, Edwards, & Berg, 2008), Motor-Free Visual Perception Test–Revised (Colarusso & Hammill, 1996), and Test of Visual Perceptual Skills–Revised (Gardner, 1996; used in Tsai, Lin, Liao, & Hsieh, 2009).

Two of the instruments—the Modified Melbourne Assessment for Children and the Revised Knox Preschool Play Scale—are geared to preschool-age children. The rest of the assessment tools would typically be used by therapists in school-based settings. For example, the Motor-Free Visual Perception Test–Revised and the Developmental Test of Visual Perception–2nd edition are frequently used by therapists to assess primary school-aged children. Several of the tests are “bottom-up” and evaluate performance-based components of children’s abilities (Weinstock-Zlotnick & Hinojosa, 2004). Examples of these assessment tools would be the Sensory Integration and Praxis Tests, the Modified Melbourne Assessment for Children, and the Test of Visual–Perceptual Skills–Revised. Bottom-up assessments tend to assess small, separate components of a child’s skills or occupational performance components, instead of taking a global perspective. Moreover, items in bottom-up assessment are frequently administered in rigid, contrived, standardized contexts that may not be meaningful to the child’s perspective and are often isolated from meaningful daily environments (Weinstock-Zlotnick & Hinojosa, 2004).

The Revised Knox Preschool Play Scale, Handwriting Proficiency Screening Questionnaire, and the Sensory Over-Responsivity Scales appear to be ecologically valid, whereas the School Function Assessment and the Children’s Kitchen Task Assessment appear to fall into the “top-down” assessment category by examining children’s functional performance in daily life (Coster, 1998; Coster & Khetani, 2008). A top-down assessment takes a global perspective and focuses on the child’s participation in his or her contexts to determine what is important to the child and the parents or caregivers (DeGrace, 2003; Edwards,illard, Praskac, & Wisniewski, 2003).

Only 8 (20.5%) of the 39 child- and youth-oriented studies published in AJOT in 2008 and 2009 focused on effectiveness. Level I studies were the most common, and the next most common were Level III and V studies, whose designs involved neither control nor randomization; consequently, only 3 (7.7%) of the child- and youth-focused AJOT studies used randomization in the assignment of participants to other intervention or control groups, and another 2 (5.1%) studies involved a one-group nonrandomized noncontrolled trial methodology. The implication for child- and youth-focused studies completed in the future is that more sophisticated sampling techniques (e.g., Level I) urgently need to be adopted.

A range of quantitative and qualitative research designs were used in the child and youth practice–centered articles published in AJOTs 2008 and 2009 volumes. No meta-analyses were published in the child and youth AJOT literature during 2008 and 2009, but one systematic review was published. Four studies used a single-case design, one study used a retrospective chart review design, and another one used a mailed-
survey design. One-group and two-group pretest–posttest designs were more common, with 20.5% (n = 8) and 12.8% (n = 5) of the child- and youth-oriented studies published in AJOT using these research design approaches, respectively. The most common qualitative research design used was grounded theory, with 15.4% (n = 6) of AJOT studies reporting its use. Brown and Brown (2005); Brown et al. (2005); and Cusick (1995) all observed that the level of rigor and methodological sophistication of occupational therapy studies being published in journals is increasing.

Of the child- and youth-related practice studies published in AJOT during 2008 and 2009, 41% (n = 16) involved some form of intervention that the sample group was exposed to or involved with. Many studies (71.8%; n = 28) also used standardized tests as part of their data collection strategy. Examples of these tests included the Peabody Developmental Motor Scales–2nd edition (Fewell & Folio, 2000), Canadian Occupational Performance Measure (Law et al., 1998), Pediatric Evaluation of Disability Inventory (Haley, Coster, Ludlow, Haltiwanger, & Andrellos, 1992), Melbourne Assessment of Unilateral Upper Extremity Function (Randall, Johnson, & Reddihough, 1999), Vineland Adaptive Behavior Scales (Sparrow, Balla, & Cicchetti, 1984), Sensory Profile (Dunn, 1999), Bruininks–Oseretsky Test of Motor Proficiency–2nd edition (Bruininks & Bruininks, 2005), School Setting Interview (Hemmingsson, Egilson, Hoffman, & Kielpfner, 2005), Developmental Test of Visual–Motor Integration (Beery & Beery, 2006), Developmental Test of Visual Perception–2nd edition (Hammill et al., 1993), School Function Assessment (Coster, Deeney, Haltiwanger, & Haley, 1998), Test of Playfulness (Bundy, 2003), and Children’s Assessment of Participation and Enjoyment and Preferences for Activities of Children (King et al., 2004). In a recent survey comparing pediatric occupational therapy practice in Australia and Canada, Rodger, Brown, Brown, and Roever (2006) noted that the Developmental Test of Visual–Motor Integration, Peabody Developmental Motor Scales–2nd edition, and the Bruininks–Oseretsky Test of Motor Proficiency–2nd edition were commonly used by therapists.

**Limitations in the Identified Research**

The 39 child and youth practice–focused studies published in AJOT’s 2008 and 2009 volumes exhibited a variety of methodological weaknesses. Frequently noted limitations were small convenience samples, lack of randomization, lack of control group for comparison, lack of control for other extraneous variables (such as other treatments) that participants in sample groups might be exposed to, and study participants being recruited from one specific geographical region or area. All of these factors greatly limit the generalizability of study results. Another frequently noted limitation was the number of statistical analyses completed and comparisons made using the same sample. Using this data analysis strategy greatly increases the risk of Type I errors. Also, power analyses were rarely included as part of the study methodology to provide an indication of the minimum required sample size.

In many studies, outdated standardized tests were used for data collection. For example, one study used the 1978 version of the Bruininks–Oseretsky Test of Motor Proficiency, but the authors should have used the 2nd edition of the test. Another study used the Motor-Free Visual Perception Test–Revised and the Test of Visual Perceptual Skills–Revised when the more current and valid 3rd editions should have been used. Using outdated tests to generate data may compromise the validity, clinical utility, and generalizability of outcomes and study findings.

Another point worth noting is that none of the 39 studies published in the 2008 and 2009 volumes that focused on child and youth practice examined the “link between occupational engagement and the health of human beings,” which is a cause for concern because “the profession may be losing an opportunity to enhance its public image by underparticipating in research studies demonstrating strong positive correlations between occupational engagement and health and well-being” (Gutman, 2008a, p. 621). No doubt, occupational therapy researchers need to start generating high-quality empirical findings that demonstrate this link, particularly in relation to children and youth.

**Conclusion**

Most of the 39 children- and youth-focused studies published in the 2008 and 2009 volumes used quantitative designs and answered basic research questions. Although AJOT appears to be on track with regard to meeting AOTA’s Centennial Vision mandate for publishing research studies related to occupational therapy child and youth practice, it is imperative that greater attention be given to studies directly examining practice effectiveness. Such studies are needed to demonstrate the value of occupational therapy in a health care system increasingly characterized by services caps, denial of reimbursement for service, and refusal to pay for services unsupported by high-quality research evidence (Willmarsh, 2005).

**References**


