<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Study Objectives</th>
<th>Level/Design/Participants</th>
<th>Intervention and Outcome Measures</th>
<th>Results</th>
<th>Study Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashburner, Ziviani, &amp; Rodger (2008)</td>
<td>Basic research</td>
<td>Quantitative, 2-group, non-randomized, case-control study using convenience sampling</td>
<td>No intervention was provided.</td>
<td>A pattern of auditory filtering difficulties, sensory underresponsiveness, and sensory seeking was associated with academic underachievement in children with ASD.</td>
<td>Participants were recruited from a limited geographic area. Small sample size limits generalizability of results. Issues of inadequate power for data analysis are also present.</td>
</tr>
</tbody>
</table>
|                                          |                          | 28 children with ASD with average range IQ (24 boys and 4 girls) and 51 age- and gender-matched typically developing peers (43 boys and 8 girls) were recruited. | Instruments Used  
- Kaufman Brief Intelligence Test  
- Gillian Autism Rating Scale  
- Gillian Asperger's Disorder Scale  
- Connor's Teacher Rating Scale- Revised Long Version  
- Achenbach System of Empirically Based Assessment: Teacher Report Form  
Statistics Used  
- Independent-sample t-tests  
- Pearson correlation coefficients  
- Spearman's correlation coefficient  
- Stepwise backward-elimination  
- Multiple regression analysis |                                                                                          |                                                                                                           |
|                                          |                          | Children with ASD were included if they attended a regular classroom, were ages 6–10, and had a diagnosis of ASD. Children with ASD were excluded if they had additional intellectual, hearing, visual, or physical impairments. Where possible, matched controls were recruited from the same classroom as the child with ASD. |                                                                                                     |                                                                                                           |                                                                                                           |
| Asher, Parham, & Knox (2008)             | Instrument development and testing | Quantitative reliability study of instrument involving 20 therapists rating participants' score profiles | Interrater reliability was calculated through the percentage of agreement among the therapist's scoring for the 2 cases. | Interrater reliability was moderate to high for interpretation of the presence of sensory integrative dysfunction using SIPT scores. Percentage agreement was 70% for Case A and 100% for Case B. Percentage agreement for identifying specific patterns of sensory integrative dysfunction ranged from 50% to 100%. | Participants were not randomly selected and were from 1 geographic region. |
|                                          |                          | 20 trained occupational therapists were recruited through convenience sampling. Therapists were from Los Angeles, CA; were female; were ages 26–60; and had 1.5–20 yr clinical experience. All participants were qualified to administer the SIPT. | Interventions Used  
- SIPT  
- Researcher-designed rating scale |                                                                                                     |                                                                                                           |
| Bazyk, Michaud, Goodman, Papp,           | Effectiveness study      | Level III                                                                                   | Intervention  
Children received direct and indirect occupational therapy services | Children made statistically significant changes in the fine motor and emergent literacy measures when | Small sample size was from 1 geographic region. No comparison group was included. No |
<p>| | | | | | |
|                                          |                          |                                                                                           |                                                                                                     |                                                                                                           |                                                                                                           |</p>
<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Study Objectives</th>
<th>Level/Design/Participants</th>
<th>Intervention and Outcome Measures</th>
<th>Results</th>
<th>Study Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hawkins, &amp; Welch (2009)</td>
<td>Quantitative, 1-group, pretest-posttest design</td>
<td>Convenience sample: 37 kindergarten-age children with and without disabilities enrolled in 2 kindergarten classrooms with fully integrated occupational therapy services participated in the study</td>
<td>in an integrated kindergarten context 2 days/wk. The kindergarten curriculum also included an emergent literacy framework.</td>
<td>the pretest-posttest data were compared.</td>
<td>Randomization of participants or power analysis was included as part of study.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Instruments Used</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Peabody Developmental Motor Scales–2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Developmental Test of Visual Motor Integration</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• In-hand manipulation skills test</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Pencil grasp rating scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Observation Survey of Early Literacy Achievement: Letter Identification, Concepts About Print, and Hearing and Recording Sounds</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Approximations of Text</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Statistics Used</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• ANOVA</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Proportional Change Index</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Descriptive statistics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bharadwaj, Daniel, &amp; Matzke (2009)</td>
<td>Basic research</td>
<td>Convenience sample: 30 children with congenital, severe–profound hearing loss and their caregivers recruited from the North Texas cochlear implant pool. Children had either 1 or 2 cochlear implants. Length of cochlear implant experience at the time of the study ranged from 0 to 7 yr.</td>
<td>No formal intervention was provided. Caregivers completed either the Infant/Toddler Sensory Profile or Sensory Profile, depending on the child's age. A subgroup of 6 children completed the MAP and the SCPRNT.</td>
<td>Nine children were classified as typical in all sensory categories, and the remaining 21 (70%) exhibited &quot;at-risk&quot; or &quot;different&quot; behaviors in ≥1 of 5 sensory categories: auditory, visual, vestibular, tactile, and oral processing. Findings suggest that children with cochlear implants may be at risk for sensory processing disorder.</td>
<td>Small sample size for comparison of scores. No randomization used in the recruitment of participants. Only 6 participants completed the MAP and the SCPRNT, a small sample size. Using isolated sub-tests from the MAP to assist with the detection of children with sensory processing disorder is also questionable.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Instruments Used</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Infant/Toddler Sensory Profile</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Sensory Profile</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• MAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• SCPRNT</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Statistics Used</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• A Pearson product–moment correlation was completed to determine whether duration of hearing loss and duration of cochlear implant use were related to the sensory processing scores.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bose &amp; Hinojosa (2008)</td>
<td>Efficacy study</td>
<td></td>
<td>No intervention was provided.</td>
<td>Therapists viewed their interactions with teachers as challenging but</td>
<td>Small sample of therapists recruited from 1 specific</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Brown, Rodger, & Davis (2008)  
**Qualitative inquiry informed by grounded theory; semistructured interviews**

6 occupational therapists took part in the study. Inclusion criteria were (1) licensed U.S. occupational therapist, (2) ≥2 yr of work experience, (3) working ≥20 hr, (4) ≥4 hr/wk spent in an inclusive classroom, (5) regular interactions with teachers, and (6) agreement to participate in study.

**Statistics Used**

All interviews were audiotaped and transcribed into a text format. Data were collected until saturation was achieved. Open coding, axial coding, and selective coding were used to identify themes.

4 themes emerged: (1) It’s Not Like I Don’t Value Collaboration (the benefits of collaboration), (2) Collaboration—I Can’t Do It Alone (the challenges of interactions), (3) My Opinion, Please Ask for It (attachment to the expert status), and (4) Is This Collaboration (interactions in practice)?

**Brown, Rodger, & Davis (2008)**

**Instruments Used**

In-depth interviews 1 hr in length were conducted. Interview questions focused on the therapists’ experiences when delivering services in inclusive schools and when interacting with teaching staff.

**Intervention**

No intervention was provided.

**Instrument Used**

- DTVP–2

**Statistics Used**

Descriptive statistics were computed for all variables. Principal-components factor analysis with orthogonal Varimax rotation was completed on the 4 DTVP–2 subscales.

Position-in-space had items load on 6 factors. Figure Ground sub-scale had items load on 5 factors. Visual Closure Scale and Form Constancy subscales both had 4 factors. DTVP–2 and its 4 motor-free subscales exhibited multidimensionality instead of the expected unidimensionality.

Bundy et al. (2008)

**Basic research**

Mixed methods  

Prospective cross-sectional study using convenience sampling and key informant interviews

20 children (6 boys and 14 girls) ages 5–7 who attended a mainstream primary school in western Sydney, New South Wales, Australia, took part in the study. 9 female teachers were also recruited. Teachers varied in age from late 20s with 5 yr of experience to 1 teacher in her 50s who had taught for 20 yr.

**Intervention**

Loose-part materials (e.g., car and bicycle tires, crates, wooden planks, trash can lids, strips of foam, cardboard boxes, plastic barrels) were placed in the playground to see whether there was any difference in the children’s level of playfulness from when no loose materials were placed on the school playground.

**Instruments Used**

ToP was used to compare video-taped play segments pre- and postintervention. Teachers who did rewarding experiences.

ToP scores were significantly higher after intervention. Teachers reported that children were more social, creative and resilient when the loose-part materials were on the playground. Children who were creative, rather than physically capable, became leaders in activity. Occupation therapists have a potential role in promoting active school playground environments.

**Bundy et al. (2008)**

**Instrument development and testing**

Quantitative, prospective quantitative cross-sectional construct validation study using convenience sampling

Convenience sample: 356 healthy, school-age children recruited from Ottawa, Canada, ranging in age from 5 to 11 yr

Inclusion criteria were (1) parental consent, (2) between ages 5 and 11, (3) proficient English-language skills, and (4) no intellectual or physical impairment.

**Intervention**

No intervention was provided.

**Instrument Used**

- DTVP–2

**Statistics Used**

Descriptive statistics were computed for all variables. Principal-components factor analysis with orthogonal Varimax rotation was completed on the 4 DTVP–2 subscales.

Position-in-space had items load on 6 factors. Figure Ground sub-scale had items load on 5 factors. Visual Closure Scale and Form Constancy subscales both had 4 factors. DTVP–2 and its 4 motor-free subscales exhibited multidimensionality instead of the expected unidimensionality.

Convenience sampling used. Participants were recruited from specific geographic region, which limits the generalizability of the results.

Participants were recruited from a limited geographic area. No randomization was used in the selection or recruitment of participants. There was potential for respondent bias from the teacher participant group.
<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Study Objectives</th>
<th>Level/Design/Participants</th>
<th>Intervention and Outcome Measures</th>
<th>Results</th>
<th>Study Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case-Smith &amp; Arbesman (2008)</td>
<td>Quantitative</td>
<td>Level I Systematic review</td>
<td>Peer-reviewed studies published between 1986 and 2007 that provided evidence for an intervention approach used by occupational therapists for children and adolescents with ASD were selected. Only studies that were accessible via electronic databases, were peer reviewed, and were at Levels I, II, and III were included. Studies that were published before 1986, were Levels IV or V, and used qualitative methods were excluded. 17,440 citations were reviewed, and 49 were selected.</td>
<td>Of the 49 selected studies, 18 were Level I, 17 were Level II, and 14 were Level III. 6 categories of research were identified: (1) sensory integration and sensory-based interventions; (2) relationship-based, interactive interventions; (3) developmental skill-based programs; (4) social cognitive skill training; (5) parent-directed or parent-mediated approaches; and (6) intensive behavioral intervention</td>
<td>Only studies published after 1986 were included. Qualitative studies were excluded. No gray literature was included as part of search.</td>
</tr>
<tr>
<td>Cope, Forst, Bibis, &amp; Liu (2008)</td>
<td>Effectiveness study</td>
<td>Level V Quantitative single-case study</td>
<td>Convenience sample: 12-mo-old child diagnosed with right hemiplegia with suspected cerebral palsy</td>
<td>Benefits of improved upper-limb function measured right after mCMIT were sustained 6 mo after intervention. mCMIT appears to be a beneficial intervention for a young child with hemiplegia.</td>
<td>Only 1 participant was included in study. Intervention period was brief, only 2 wk. Hard to differentiate whether the change in upper-extremity function measured at 6 mo after intervention was truly attributable to mCMIT or partially because of developmental gains made by the child.</td>
</tr>
<tr>
<td>Dickie, Baranek, Schultz, Watson,</td>
<td>Basic research</td>
<td>Qualitative approach using open-ended interviews with key informants</td>
<td>Intervention N/A</td>
<td>Data fell into 2 broad categories: the sensory-related experiences of children as described by their parents.</td>
<td>Only 2 questions were posed to parents about their children’s sensory experiences. The parents</td>
</tr>
</tbody>
</table>
Parents of 66 preschoolers were recruited. Parents of 37 children with autism (mean age = 47.9 mo [SD = 20.9]) were recruited using a university-based statewide research registry. Parents of 29 typically developing children (mean age = 42.3 mo [SD = 19.7]) were recruited through local day care centers, university e-mail distribution lists, and word of mouth.

**Instruments Used**
Interview using a Critical Incident Technique: Parents were asked to describe a situations in which their child had a “good” sensory experience and a “bad” sensory experience and their own perception of how these situations felt to the child.

**Statistics Used**
Data were collected via telephone or face-to-face interviews. Interviews were audiotaped and transcribed. Atlas.ti software for qualitative analysis was used to facilitate coding and sorting the data. Codes were then aggregated to identify the topic dimensions.

The most common unpleasant sensory experiences for both groups involved sound. The most common pleasant sensory experiences involved touch and movement. Many parents had difficulty understanding the concept of sensory experiences.

Intervention package was effective in increasing the variety and texture of food eaten by both participants. At the end of the intervention, both participants were eating table foods and drinking from an open cup.

Small convenience sample, lack of randomization, no control group for comparison, potential for bias or subjectivity in data collection procedures.
<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Study Objectives</th>
<th>Level/Design/Participants</th>
<th>Intervention and Outcome Measures</th>
<th>Results</th>
<th>Study Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engel-Yeger (2009)</td>
<td>Basic research</td>
<td>310 typically developing children (141 boys and 169 girls with a mean age of 8.86 yr [SD = 2.17]) from Israel were recruited. All children attended mainstream public school. The children were divided into 3 age groups: 5–8 (n = 140), 9–12 (n = 140), and 13–16 (n = 30) years. Inclusion criteria were being able to speak, read, and write Hebrew fluently. Children with known neurological, developmental, or learning disabilities were excluded.</td>
<td>Differences in activity preferences were found between genders. Younger children preferred to participate in more PAC scales than did older children. Sociodemographic variables appear to affect children’s activity preferences.</td>
<td>Only healthy children were included in the study sample. PAC was developed in Canada, but the study was completed in Israel; hence, there may be some cultural differences in children’s activity preferences that the PAC might not have been sensitive to.</td>
<td></td>
</tr>
<tr>
<td>Engel-Yeger, Jarus, Anaby, &amp; Law (2009)</td>
<td>Basic research</td>
<td>Convenience sample: 52 Israeli children ages 12–16: 22 with CP (10 boys, 12 girls; mean age = 14, SD = 1.4) and 30 typically developing children (9 boys, 21 girls; mean age = 13.43, SD = 1.11).</td>
<td>Differences in activity preferences were found between genders. Younger children preferred to participate in more PAC scales than did older children. Sociodemographic variables appear to affect children’s activity preferences.</td>
<td>Only healthy children were included in the study sample. PAC was developed in Canada, but the study was completed in Israel; hence, there may be some cultural differences in children’s activity preferences that the PAC might not have been sensitive to.</td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Design</td>
<td>Participants</td>
<td>Intervention</td>
<td>Instruments Used</td>
<td>Statistics Used</td>
</tr>
<tr>
<td>-------</td>
<td>--------</td>
<td>--------------</td>
<td>-------------</td>
<td>-----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Engel-Yeger, Nagauker-Yanuv, &amp; Rosenblum (2009)</td>
<td>Basic research, Quantitative, 2-group nonrandomized case-control study using convenience sampling</td>
<td>Convenience sample: 42 children, 21 with dysgraphia (15 boys, 6 girls; mean age 8.58, SD = 0.62) and 21 typically developing with no handwriting deficiencies (15 boys, 6 girls; mean age 8.8, SD = 0.47) from mainstream schools in Israel.</td>
<td>N/A</td>
<td>ComPET, HHE, CHaP, PEGS</td>
<td>T tests were used to test differences between the mean scores. Mann–Whitney U tests were used to evaluate the significance of differences between the groups. Spearman rank-order correlations were used to evaluate the correlations between the different measures.</td>
</tr>
<tr>
<td>Franklin, Deitz, Jirikowic, &amp; Astley (2008)</td>
<td>Basic research, Quantitative, retrospective 1-group cross-sectional study using convenience sampling</td>
<td>Data on 44 children (30 boys, 14 girls) were obtained via retrospective study using the Washington State FAS DPN clinical database.</td>
<td>N/A</td>
<td>SSP, CBCL</td>
<td>Pearson correlation coefficients, t tests, x² tests, Fisher exact test</td>
</tr>
<tr>
<td>Hemmingsson, Lidstrom, &amp; Nygard (2009)</td>
<td>Efficacy study, Mixed methods; interviews and field observations</td>
<td>Intervention: Children had received an assistive technology device 3–6 mo.</td>
<td>N/A</td>
<td>NA</td>
<td>The following themes emerged: (1) experiencing immediate benefits in terms of the functioning, (2) assistive technology device as</td>
</tr>
<tr>
<td>Author/Year</td>
<td>Study Objectives</td>
<td>Level/Design/Participants</td>
<td>Intervention and Outcome Measures</td>
<td>Results</td>
<td>Study Limitations</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------</td>
<td>---------------------------</td>
<td>-----------------------------------</td>
<td>---------</td>
<td>------------------</td>
</tr>
<tr>
<td>Hilton, Crouch, &amp; Israel (2008)</td>
<td>Basic research</td>
<td>Quantitative 2-group nonrandomized case-control study using convenience sampling</td>
<td><strong>Intervention</strong> No intervention was provided. <strong>Instruments Used</strong> CAPE, Social Responsiveness Scale <strong>Statistics Used</strong> Mann–Whitney U test, Kruskal-Wallis 1-way ANOVA, MANOVA</td>
<td>Findings indicate that out-of-school participation (in number of activities in which children participated, the number of people with whom they participated, and the variety of environments in which they participated) was significantly different for children with HFASD compared with typically developing peers.</td>
<td>Participants were recruited from limited geographic area. No randomization was used in the selection or recruitment of participants. Issues of inadequate power for data analysis are also present.</td>
</tr>
<tr>
<td>Hwang &amp; Davies (2009)</td>
<td>Instrument development and testing</td>
<td>Quantitative prospective and quantitative cross-sectional validity study</td>
<td><strong>Intervention</strong> No intervention was provided. <strong>Instrument Used</strong> SFA, completed by the students’ classroom teacher <strong>Statistics Used</strong> Authors used Rasch modeling to examine the SFA’s internal consistency</td>
<td>Most SFA items (255 of 266) within its 18 Activity Performance scales met the Rasch analysis goodness-of-fit statistics requirements. Item difficulty analysis yielded results similar to the hierarchical structure in the SFA manual.</td>
<td>Participants were recruited from limited geographic area. No randomization was used in the selection or recruitment of participants. Small sample size limits generalizability of results.</td>
</tr>
<tr>
<td>Study</td>
<td>Type</td>
<td>Participants</td>
<td>Instruments Used</td>
<td>Statistics Used</td>
<td>Results</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
<td>--------------</td>
<td>-----------------</td>
<td>----------------</td>
<td>---------</td>
</tr>
<tr>
<td>Jankovich, Mullen, Rinear, Tanta, &amp; Deitz (2008)</td>
<td>Instrument development and testing</td>
<td>Quantitative prospective, quantitative cross-sectional reliability and validity study</td>
<td>Convenience sample: 38 children recruited from the University of Washington Experimental Education Unit and 2 private preschools. 2 raters evaluated 38 typically developing children, ages 36–72 mo. Inclusion criteria were (1) typical development, (2) parental consent, and (3) child verbal assent. Typical development was defined as not having a clinical diagnosis (such as CP or ASD), not having received education or therapy services, and not using a mobility aid.</td>
<td>Interrater reliability of the 2 raters for the overall play age were within 8 mo of each other 86.7% of the time; for the 4 dimensions, they were within 12 mo of each other 91.7%–100% of the time; and for the 12 category scores, they were within 1 age level of each other 81.8%–100% of the time. Construct validity results showed a general match between children’s chronological ages and their overall play age scores.</td>
<td>Only 1 participant was included in study. Intervention period was brief, lasting only 2 wk. Hard to differentiate whether the change in upper-extremity function measured at 3 mo postintervention was truly attributable to CMIT or partially because of developmental gains made by the child. The geographic area where children were recruited from was not reported. The method of recruiting/contacting the participants was not reported.</td>
</tr>
<tr>
<td>Martin, Burtner, Poole, &amp; Phillips (2008)</td>
<td>Effectiveness study</td>
<td>Level V Quantitative single-case study</td>
<td>Convenience sample: 35-mo-old child presenting with right spastic hemiplegia</td>
<td>COPM-identified goals of increased independence with bilateral hand play and participation in gross motor play with friends increased. Improvements in self-care, arm function, and grip strength were also noted.</td>
<td>Participants recruited from limited geographic area. Small sample size limits generalizability of results. The raters were entry-level Master of Occupational Therapy students and not qualified therapists.</td>
</tr>
<tr>
<td>Miller &amp; Kuhaneck (2008)</td>
<td>Basic research</td>
<td>Qualitative inquiry was informed by grounded theory; semistructured interviews</td>
<td>10 children (6 boys, 4 girls, ages 7–11) were recruited via individual in-depth interviews that focused on play “Fun” emerged as the core category explaining the choice of specific play activities for children. 4 other categories of characteristics emerged as contributors to</td>
<td>COPM-identified goals of increased independence with bilateral hand play and participation in gross motor play with friends increased. Improvements in self-care, arm function, and grip strength were also noted.</td>
<td>Participants recruited from limited geographic area. Small sample size limits generalizability of results. The raters were entry-level Master of Occupational Therapy students and not qualified therapists.</td>
</tr>
<tr>
<td>Author/Year</td>
<td>Study Objectives</td>
<td>Level/Design/Participants</td>
<td>Intervention and Outcome Measures</td>
<td>Results</td>
<td>Study Limitations</td>
</tr>
<tr>
<td>------------</td>
<td>------------------</td>
<td>---------------------------</td>
<td>----------------------------------</td>
<td>---------</td>
<td>------------------</td>
</tr>
<tr>
<td>Myers (2008)</td>
<td>Efficacy study</td>
<td>Quantitative mailed survey to respondents</td>
<td>500 therapists were randomly selected from the AOTA School System Special Interest Section. Surveys were returned by 173 therapists (44.3% response rate). Most therapists had been working &gt;7 yr, had a bachelor's degree, and worked in both preschool and kindergarten settings.</td>
<td>Participants reported that evaluation was the most frequently used strategy in the transition of children from early intervention or preschool to kindergarten. A minority of therapists received specialized training about transition.</td>
<td>No reliability or validity data were reported about the survey. Moderate response rate. Data analysis was largely descriptive. No comparison group was included.</td>
</tr>
<tr>
<td>Pfeiffer, Henry, Miller, &amp; Witherell (2008)</td>
<td>Effectiveness study</td>
<td>Level I</td>
<td>Quantitative 1-group pretest-posttest design with random assignment to either control or intervention group Convenience sampling was based on consent received from parents for children to participate. Inclusion criteria were children exhibiting attention difficulties in a classroom setting.</td>
<td>Intervention group exhibited a statistically significant difference in relation to attention to task compared with the control group. Disc ‘O’ Sit cushions appear to be a helpful intervention strategy.</td>
<td>Only classroom teacher ratings on the BRIEF were used to measure potential changes. Participants were from 1 geographic region. Only children enrolled in 2nd grade were included, which limits generalizability of the findings.</td>
</tr>
</tbody>
</table>
61 2nd-grade students (45 boys, 16 girls) took part; 32 students were assigned to the control group, and 29 students were assigned to the intervention group. Student age ranged from 90 to 112 mo. Mean age was 99 mo.

Pierce, Munier, & Myers (2009) Basic research Qualitative inquiry informed by grounded theory using videotaped sessions, in-depth interviews, and researcher observation records. 18 typically developing White children (9 boys, 9 girls) and their mothers from Southern California were recruited. The children’s ages ranged from 1 to 18 mo.

Intervention The video, interview, and observation record data were analyzed using a computer-assisted video analysis system, text-coding software, memo writing, visual modeling, theoretical sampling, and expert review.

Instruments Used A grounded theory of constant comparison was used. Several strategies were included to ensure trustworthiness, including a cross-class and gender-balanced sample, comparative use of a chimpanzee infant sample, piloting, peer debriefing, expert review, several data types, visual modeling, and theoretical sampling.

Statistics Used Data from 133 home visits included videotaped self-directed play sessions with usual objects, interviews, and observational records. Home data collection occurred monthly from ages 1–18 mo during morning hours.

Infant Space Theory provides a perspective on infant–toddler interactions with the spaces and objects of the home. This view of infants–toddlers with their contexts describes progressions in gaze and visual play, in mapping and ranging home space, in stationary object play, and in the described development of mobile object play. The study findings may assist therapists in creating and modeling naturalistic interventions with infants and their families.

Pizur-Barnekow, Kraemer, & Winters (2008) Basic research Quantitative prospective 1-group pretest–posttest design using convenience sampling. Mothers’ mean age was 30 yr, and most were White (95%). Infants consisted of 8 boys and 5 girls with a mean age of 15 wk (SD = 0.97).

Mothers were included if the child was their firstborn, they were married or living with a partner.

Intervention 13 infants watched computer-generated synchronous or asynchronous slideshows of auditory and visual stimuli. Infants were tested between the ages of 14 and 17 wk.

Instruments Used Visual behavior was recorded via videocamera, and vagal tone data were collected via an

Visual behavior did not differ between the synchronous and asynchronous slideshow conditions. Vagal tone was significantly lower during the asynchronous slideshow. Infants may discriminate synchronous from asynchronous stimuli changing visual behavior.

Participants recruited from limited geographic area. No randomization used in the selection or recruitment of participants. Small sample size limits generalizability of results. Issues of inadequate power for data analysis were also present.

A sample of 18 mother–infant dyads from a White background residing in the Southern Californian region has limited generalizability. The authors also reported that the data were gathered in the mid-1990s but were not analyzed until after 2007; therefore, it questionable whether data more than a decade old are viable to complete such an analysis on.
Supplemental Table 1. Summary of Child and Youth Practice Area Publications in the *American Journal of Occupational Therapy* in 2008 and 2009 (cont.)

<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Study Objectives</th>
<th>Level/Design/Participants</th>
<th>Intervention and Outcome Measures</th>
<th>Results</th>
<th>Study Limitations</th>
</tr>
</thead>
</table>
| Pont, Wallen, Bundy, & Case-Smith (2008) | Instrument development and testing | Prospective quantitative cross-sectional reliability and validity study                  | Intervention: No intervention was provided.  
Instrument Used: TIHM  
Statistics Used: Descriptive statistics were computed for all variables. Authors used Rasch modeling to examine the TIHM's construct validity, inter-rater reliability, and test-retest reliability. | The TIHM was found to have adequate construct validity and inter-rater reliability, but test-retest reliability was not supported. | Participants recruited from a limited geographic area. No randomization was used in the selection or recruitment of participants. Small sample size limits generalizability of results. |
| Randall, Imms, & Carey (2008) | Instrument development and testing | Prospective quantitative cross-sectional validity study                                  | Intervention: No intervention was provided.  
Instruments Used: Modified Melbourne Assessment for Children Ages 2 to 4  
Quality of Upper Extremity Skills Test  
Statistics Used: Descriptive statistics were computed for all variables. $\chi^2$ statistic and scatter plots were used to examine the Modified Melbourne Assessment for Children data. | All children ages 2.5–4 scored as expected on the Modified Melbourne Assessment for Children, and it may be used with children without neurological impairment in the 2.5- to 4-yr age group with confidence. | Participants recruited from a limited geographic area. Small sample size limits generalizability of results. The construct validity of the Melbourne Assessment for Children has not been well established. |
| Rechetnikov & Maitra (2009) | Meta-analysis                      | 16 studies that met inclusion criteria were included.                                      | Intervention: N/A  
Instruments Used: The studies were coded into 3 categories: (1) motor error, (2) motor score, and (3) motor time.  
Statistics Used: Descriptive statistics were computed for all variables. $\chi^2$ statistic and scatter plots were used to examine the Modified Melbourne Assessment for Children data. | The 16 studies yielded 110 effect sizes. Children with speech and language impairments made more motor errors than children without impairments, with a statistically large effect size. Deficits in specific speech and language disorders were associated with motor impairments. To identify children at risk for motor delays, scores from standardized motor skill tests may be used.  
Gray literature was not included in the search strategy. Inclusion of old studies back to 1960 may not have the rigor required. The inclusion of motor scores from nonstandardized motor skill tests may cause data with poor validity to be included in the meta-analysis. | |
that compared speech–language-impaired children and healthy children on motor tests. A total of 42 studies were located, but only 16 met inclusion criteria.

Inclusion criteria: (1) published in English between 1960 and 2006, (2) included children ages 2–21 with diagnosed speech and language problems, (3) presences of healthy control group, (4) motor performance assessed using standardized and nonstandardized motor skills testing, and (5) test scores (means and SDs) available for effect size calculation.

Statistics Used
Effect size (d) and Fisher’s Z were computed using Comprehensive Meta-Analysis software. Heterogeneity was evaluated by obtaining Q and I² values that represent the presence and the extent of the heterogeneity.

Risk for motor developmental delay, assessments of motor performance should be added to assessments of specific language disorders.

Reynolds & Lane (2009)

Basic research

Quantitative 2-group nonrandomized case-control study using convenience sampling

Convenience sample: 48 children (24 with ADHD and 24 without ADHD) between the ages of 6 and 10

Typically developing group included 13 girls and 11 boys with a mean age of 102 mo (SD = 18.1). ADHD group was divided into 2 groups, 1 group with ADHD and sensory overresponsivity (n = 13; 5 girls and 8 boys; mean age 107.9 mo [SD = 17]) and 1 group with ADHD only (n = 11, 4 girls and 7 boys; mean age 110.8 mo [SD = 19.8]).

Inclusion criteria included the children having normal intelligence (IQ > 70).

Intervention
N/A

Instruments Used
- RCMAS
- SOR
- Demographic form that asked questions about child’s age, race, gender, and current medication regimen

Statistics Used
Anxiety and SOR scores were examined using ANOVA and Fisher’s exact test to detect differences between group means and compare scores to a clinical cutoff standard.

Children presenting with ADHD and sensory overresponsivity were more anxious than both the ADHD-only group and the non-ADHD control group. Children with ADHD and sensory overresponsivity were more likely to have clinically significant anxiety as determined by total scores on the RCMAS.

Participants were recruited from 1 geographic region, which limits generalizability. Sample size was small for comparison of RCMAS and SOR scores. No randomization was used in the selection or recruitment of participants. Multiple data comparisons using the same sample increased the risk of Type I errors occurring.


Instrument development and testing

Prospective quantitative cross-sectional reliability and validity study using convenience sampling

49 typically developing children ages 8–12 participated in the study. Mean age was 10.4 yr (SD = 1.12). Children were

Intervention
No intervention was provided.

Instruments Used
- CKTA
- Parent BRIEF
- Delis–Kaplan Executive Function System Color–Word

Interater reliability of the CKTA was 0.96. Internal consistency of the CKTA was moderate with a Cronbach’s α of 0.68. Support for the CKTA’s discriminant validity and concurrent validity were obtained. The CKTA was able to differentiate between low- and high-functioning groups.

Participants were recruited from a limited geographic area. No randomization used in the selection or recruitment of participants. Small sample size limits generalizability of results. Only 1 ethnic group was represented in the study participants.

(Continued)
Supplemental Table 1. Summary of Child and Youth Practice Area Publications in the *American Journal of Occupational Therapy* in 2008 and 2009 (cont.)

<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Study Objectives</th>
<th>Level/Design/Participants</th>
<th>Intervention and Outcome Measures</th>
<th>Results</th>
<th>Study Limitations</th>
</tr>
</thead>
</table>
| **Rosenblum (2008)** | Instrument development and testing                    | Prospective quantitative cross-sectional reliability and validity study using convenience sampling | 230 children were recruited via convenience sampling from 4 public schools in northern Israel. A letter was sent home to parents requesting that their child take part in the study. Children were ages 7–14 with no documented history of developmental delay or neurological or physical impairment. 54% were boys, and 46% were girls. | **Intervention** No intervention was provided. **Instruments Used**  
- ComPET  
- HHE  
- Handwriting Proficiency Screening Questionnaire  
**Statistics Used**  
- Internal consistency was examined via Cronbach’s α  
- Intraclass correlation  
- Spearman rank-order correlation  
- Mann–Whitney procedure  
- Principal-components factor analysis | Internal consistency was .90, interrater reliability was .92, and test-retest reliability was 0.84. Concurrent validity correlations ranged from 0.52 to 0.65. Construct validity confirmed a 2-factor structure accounting for 67% of the variance. | Participants recruited from limited geographic area. No randomization was used in the selection or recruitment of participants. Multiple data comparisons using the same sample increased the risk of Type I errors. |
| **Sachs & Nasser (2009)** | Efficacy study                                        | Naturalistic qualitative method based on a phenomenological approach; interviews and participatory observations | Participants were identified by an occupational therapist or social worker who worked at the residential facility; parents provided consent to take part in the study. Participants were 10 families of children with mental retardation living in a long-term residential facility from Haifa, Israel. 6 families were Jewish and 4 were Arab.  
**Intervention** Parents and children took part in ≥10 monthly family occupations held in the Snoezelen.  
**Instruments Used** Semistructured in-depth interviews and participatory observations were used for data collection. Interviews were audiorecorded and transcribed for further analysis. Observations were videorecorded and transcribed. Field notes were recorded by a 2nd researcher. | 2 themes emerged: the Snoezelen environment was experienced as another world by parents and facilitated being together as a family. The Snoezelen provided a sense of intimacy and relaxation, which is important in facilitating family occupations. | Children lived in an institutional residential environment and Snoezelen is not a real-world living environment in which occupations take place. Member checking with parents was not completed, therefore, 1 triangulation source was not used. |
Parents' ages ranged from 31 to 53. Children's ages ranged from 4 to 17. Inclusion criteria were (1) family had ≥1 children with diagnosis of severe or profound mental retardation, (2) family had no other children with disabilities living in other institutions, and (3) family members had participated in ≥10 mo consecutive family occupations held in the Snoezelen.

### Statistics Used
Interview data were analyzed line by line, and codes were developed. Then data were analyzed in an integrative cycle approach in which themes were identified. Observations were analyzed and coded. Trustworthiness was ensured by comparing data from field notes, observations, and interviews. Confirmability and audit of the research process was established by retention of the data collection materials.

### Intervention
No intervention was provided.

### Instruments Used
- Sensory Over-Responsivity Scales
- SSP

### Statistics Used
- Descriptive statistics were computed for all variables.
- Exploratory principal-components analysis using an orthogonally rotated component matrix
- Internal consistency using Cronbach's $\alpha$
- Interrater reliability using Pearson correlation coefficient
- Discriminant validity using $t$ tests
- Concurrent validity using Pearson correlation coefficients

Sensory Over-Responsivity Scales exhibited high internal consistency reliability and discriminant validity. The scale was reduced from 21 subtests to 15 and from 90 items to 53. The scale also significantly correlated with the SSP.

### Convenience sampling used. Small sample size to conduct principal-components analysis. Multiple data comparisons using the same sample increased the risk of Type I errors occurring.

---

**Schoen, Miller, & Green (2008)**

**Basic research**

Instrument development and testing

Prospective quantitative cross-sectional reliability and validity study using convenience sampling

2 separate samples were recruited. Sample 1 consisted of 125 people, and Sample 2 consisted of 92 people via convenience sampling. Age of participants ranged from 3 to 55.

In Sample 1, 60 were typically developing, and 65 were referred for symptoms of sensory overresponsivity. Sample 2 included 44 healthy participants and 48 with signs of overresponsivity. For healthy participants, inclusion criteria were (1) no history of sensory sensitivity, (2) no disability diagnoses, (3) no history of therapy intervention, and (4) no prescription medication. For inclusion in the overresponsivity group, participants had to exhibit signs of sensory sensitivity that interfered with their daily life activity.

### Intervention
No intervention was provided.

### Instruments Used
- Sensory Over-Responsivity Scales
- SSP

### Statistics Used
- Descriptive statistics were computed for all variables.
- Exploratory principal-components analysis using an orthogonally rotated component matrix
- Internal consistency using Cronbach's $\alpha$
- Interrater reliability using Pearson correlation coefficient
- Discriminant validity using $t$ tests
- Concurrent validity using Pearson correlation coefficients

Sensory Over-Responsivity Scales exhibited high internal consistency reliability and discriminant validity. The scale was reduced from 21 subtests to 15 and from 90 items to 53. The scale also significantly correlated with the SSP.

### Convenience sampling used. Small sample size to conduct principal-components analysis. Multiple data comparisons using the same sample increased the risk of Type I errors occurring.

---

**Shoener, Kinnealey, & Koenig (2008)**

**Basic research**

Case report using quantitative and qualitative data collection methods

Personal narrative completed by 18-yr-old boy diagnosed with pervasive developmental disorder not otherwise specified, apraxia of speech, and dyspraxia; concurrent difficulties with sensory processing and regulation, praxis, and communication may contribute to the challenges that people with autism have when attempting to communicate with others and to develop meaningful relationships.

### Methodology of study was not well described or formatted. No methods were used to ensure trustworthiness mentioned. The progress made by participant made over a 5-yr period was not well documented. No dates or time lines of when the typed quotes were typed were included.**
<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Study Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silva, Ayres, &amp; Schalock (2008)</td>
<td>Effectiveness study Level III Prospectve 1-group pretest-posttest design</td>
</tr>
<tr>
<td></td>
<td>Convenience sample: Recruitment letters were sent to parents of children between ages 3 and 6 receiving autism services from 1 Education Service District serving 2 counties in Oregon.</td>
</tr>
</tbody>
</table>

Inclusion criteria were (1) age <6 with a diagnosis of autism, (2) enrolled in early intervention services, (3) no medical diagnoses or medication, and (4) parental consent. 26 children ranging in age from 31 to 84 mo were diagnosed with autism; 15 therapists were

Intervention Delivery of 2-mo/80-hr Qigong Sensory Massage Protocol

Statistics Used • Change scores were calculated • Wilcoxon Sign test • t test for independent samples • Confidence intervals

Findings indicated that children exhibited significant short-term improvements in sensory impairment and social development after receiving the Qigong Sensory Massage Protocol.

Small convenience sample; lack of randomization; no control group for comparison; lack of control for other treatments that children might have received concurrently.
trained in the delivery of Qigong Sensory Massage Protocol

Silva, Schalock, Ayres, Bunse, & Budden (2009)

Effectiveness study

Level I

Quantitative 1-group pretest–posttest design with random assignment to a waiting list control group or an intervention group

Convenience sample: Recruitment letters were sent to parents of children between ages 3 and 6 receiving autism services from 2 Education Service Districts serving 8 counties in Oregon.

Inclusion criteria were (1) age < 6, (2) eligible for intervention services for autism, (3) no complicating medical diagnoses, and (4) parental consent. 46 children (37 boys and 9 girls) with a mean age of 59 mo participated; children were randomly assigned to an intervention or a waiting-list control group.

Intervention group received 20 sessions of Qigong Sensory Training; parents received training and completed the follow-through massage given daily to the child.

Instruments Used
- Pervasive Developmental Disorders Behavior Inventory
- Teacher and Parent versions
- Autism Behavior Checklist
- Sense and System Checklist

Statistics Used
- MANCOVA
- Post hoc univariate analysis of covariance
- t tests for individual samples with Bonferroni adjustments

Results indicated that Qigong Sensory Training reduced the severity of autism as measured by the tests of behavior and developmental disabilities. Teacher and parent evaluations indicated that children had significant classroom improvement of social–language skills and reductions in autistic behaviors.

Tsai, Lin, Liao, & Hsieh (2009)

Instrument development and testing

Quantitative reliability study using convenience sampling

Children were recruited from mainstream classrooms by special education teachers and from rehabilitation departments by occupational therapists in Taipei, Taiwan.

52 children with CP consisting of 31 boys and 21 girls ranging in age from 5 to 8. Inclusion criteria were (1) a diagnosis of CP, (2) between ages 5 and 8, and (3) an ability to follow general oral instructions. Exclusion criteria were (1) an inability to follow the instructions of the MVPT–R or TVPS–R, and (2) poor visual acuity as indicated by the Teller Acuity Cards assessment at 38 cm < 6.50 cycle/cm.

No intervention was provided.

Instruments Used
- MVPT–R
- TVPS–R

Statistics Used
- Intraclass correlation coefficients and SRD were used to examine the test–retest and interreliability. Cronbach’s $\alpha$ was used to estimate internal consistency.

Test–retest reliability of the MVPT–R and TVPS–R were .96 and .97. The TVPS–R subscale correlations ranged from .76 to .92. The SRD for the MVPT–R was 3.9 (9.6% of the total score) and 13.5 (12% of the total score) for the TVPS–R. Interrater reliability correlation for the MVPT–R was .93 and .92 for the TVPS–R. Cronbach’s $\alpha$ for the MVPT–R was .87 and .98 for the TVPS–R. At the subscale level, the TVPS–R Cronbach’s $\alpha$s ranged from .87 to .94.

Participants were recruited from a limited geographic area. No randomization was used in the selection or recruitment of participants. Small sample size limits generalizability of results. Revised versions of MVPT–R and TVPS–R have been published by their authors in recent years. A major limitation is that the versions of the MVPT–R and TVPS–R used in this study are now out of date and irrelevant for use in practice.

Convenience sampling used to recruit participants. Multiple data comparisons using the same sample increased the risk of Type I errors. No power analysis was included as part of study.
The rationale for using neurodevelopmental treatment with children exhibiting mild retardation is not valid. The 1978 version of the data when the more recent 2005 version should have been used. No data were collected on motor-free visual perception, school-related skills, or occupational performance integration group exhibited significant gains in gross motor skills, and the neurodevelopmental treatment group had the smallest amount of change.

The authors stated that convenience sample: Participants were recruited from a pediatric, occupational therapy unit, Department of Rehabilitation Medicine in a university-affiliated medical center in Taiwan. Inclusion criteria were (1) between ages 7 and 8, (2) a diagnosis of mild mental retardation (e.g., IQ of 50–70), (3) absence of serious emotional or behavioral disturbances, (4) not receiving therapy treatment, and (5) ability to follow test instructions. Exclusion criteria included children presenting with coexisting autism, CP, blindness, deafness, or previous history of neurological disorders. Sample size included 160 children, 40 of whom were assigned to a control group.

Intervention: Children were randomly assigned to 1 of 3 intervention groups that were based on either sensory integration, neurodevelopmental treatment, or perceptual-motor principles. Another 40 children served as controls. Each intervention group received 3 1-hr sessions/wk for a 40-wk period.

Instruments Used:
- Bruininks–Oseretsky Test of Motor Proficiency
- DVTP
- Test of Sensory Integrative Functioning

Tests were administered by therapists who were blinded to the children’s group involvement.

Statistics Used: MANOVA; if significant group effects were found, then follow-up F tests were performed with Scheffé post hoc comparisons; effect sizes were calculated as well.

All 3 intervention groups significantly outperformed the control group on all measures. The sensory integration group exhibited a greater change on fine motor, upper-limb coordination, and sensory integrative functioning. The perceptual-motor group exhibited significant gains in gross motor skills, and the neurodevelopmental treatment group had the smallest amount of change.

The rationale for using neurodevelopmental treatment with children exhibiting mild retardation is not valid. The 1978 version of the Bruininks–Oseretsky Test of Motor Proficiency was used to collect data when the more recent 2005 version should have been used. No data were collected on motor-free visual perception, school-related skills, or occupational performance skills. Multiple data comparisons using the same sample increased the risk of Type I errors occurring.