

Technical Report

INFANT/TODDLER SENSORY PROFILE™



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Overview

The *Infant/Toddler Sensory Profile* provides a standard method for professionals to measure a child's sensory processing abilities and to profile the effect of sensory processing on functional performance in the child's daily life. This profile is designed for children from birth to 36 months. It is a judgment-based caregiver questionnaire and each item describes children's responses to various sensory experi-

ences. Certain patterns of performance are indicative of difficulties with sensory processing and performance. When combined with other evaluations, observations, and reports, results of the *Infant/Toddler Sensory Profile* provide another perspective on the child's strengths and challenges for diagnostic and intervention planning.

Benefits and Features

The *Infant/Toddler Sensory Profile* is a tool for linking performance strengths and barriers with the child's sensory processing patterns. It provides a natural way to include families in the information-gathering process.

Caregivers report a therapeutic benefit from completing the *Infant/Toddler Sensory Profile*. The items are familiar to caregivers living with infants and toddlers who have sensory processing problems. Reading about their child's "idiosyncratic" behaviors during assessment provides validation that there is something real about their family's struggle and suggests that there may be ways to deal with it.

The *Infant/Toddler Sensory Profile* provides professionals with a way to capture the child's responses during the natural course of daily life, a task difficult or impossible to achieve with formal evaluations in unfamiliar settings. The profile is constructed so that professionals can engage in theory-based decision making during comprehensive assessment and intervention planning. Results provide information about the child's level of responsivity to sensory events, status measurement of current performance levels, and guideposts for planning interventions.

It is easy to administer, score, and interpret and is applicable for children with all types of disabilities and severity levels.

Profile Components

The *Infant/Toddler Sensory Profile* consists of a User's Manual, a combined Caregiver Questionnaire for children ages birth to 6 months and children ages 7 to 36 months, and a combined Summary Score Sheet for children ages birth to 6 months and children ages 7 to 36 months.

The User's Manual contains information about the rationale, theory, and development of the profile and specific information about the administration, scoring, and interpretation of the scores. The manual also contains case studies and intervention suggestions.

The Caregiver Questionnaire is completed by the caregiver, who indicates the frequency of the child's responses (Almost Always, Frequently, Occasionally, Seldom, or Almost Never) to various sensory experiences. The questionnaire is available in both English and Spanish.

The Summary Score Sheet contains an area to record demographic information, a quadrant grid to help summarize scores in designated groupings, and a quadrant summary to plot raw score totals into performance categories. A sensory processing section summary is included for children ages 7 to 36 months.

Description of Item Categories

The *Infant/Toddler Sensory Profile's* Caregiver Questionnaire contains 36 items for children ages birth to 6 months and 48 items for children ages 7 to 36 months. The items describe children's responses to daily sensory experiences in the following categories:

Sensory Processing

- **General Processing** items measure the child's responses related to routines and schedules. ("My child's behavior deteriorates when the schedule changes.")
- **Auditory Processing** items measure the child's responses to things heard. ("My child enjoys making sounds with his/her mouth.")
- **Visual Processing** items measure the child's responses to things seen. ("My child enjoys looking at shiny objects.")
- **Tactile Processing** items measure the child's responses to stimuli that touch the skin. ("My child resists being cuddled.")
- **Vestibular Processing** items measure the child's responses to movement. ("My child resists having his head tipped back during bathing.")
- **Oral Sensory Processing** (7 to 36 months only) items measure the child's responses to touch, taste, and smell stimuli to the mouth. ("My child licks/chews on nonfood objects.")

The *Infant/Toddler Sensory Profile* also reflects the quadrants in Dunn's Model of Sensory Processing, which provides a theoretical framework for interpreting the scores, understanding what they mean for the individual, and designing interventions.

Quadrants

Low Registration—Items included in this score measure the child's awareness of all types of sensation available. ("My child seems unaware of wet or dirty diapers.")

Sensation Seeking—Items included in this score measure the child's interest in and pleasure with all types of sensation. ("My child enjoys looking his/her own reflection in the mirror.")

Sensory Sensitivity—Items included in this score measure the child's ability to notice all types of sensation. ("My child is distracted and/or has difficulty eating in noisy environments.")

Sensation Avoiding—Items included in this score measure the child's need for controlling the amount and type of sensations available at any time. ("My child avoids getting his/her face wiped.")

Low Threshold—This combined quadrant (Sensory Sensitivity and Sensation Avoiding) is relevant to some aspects of poor sensory processing, particularly for children who are fussy or who require a great deal of structure.

Scores Provided

Researchers defined two classification systems, one for children ages birth to 6 months and one for children ages 7 to 36 months, by determining cut scores for each quadrant raw score total and/or sensory processing section.

The classification system for children ages birth to 6 months describes the child's sensory processing abilities for each quadrant and combined quadrant as either:

- **Typical Performance**
- **Consult and Follow-up**

The classification system for children ages 7 to 36 months describes the child's sensory processing abilities for each

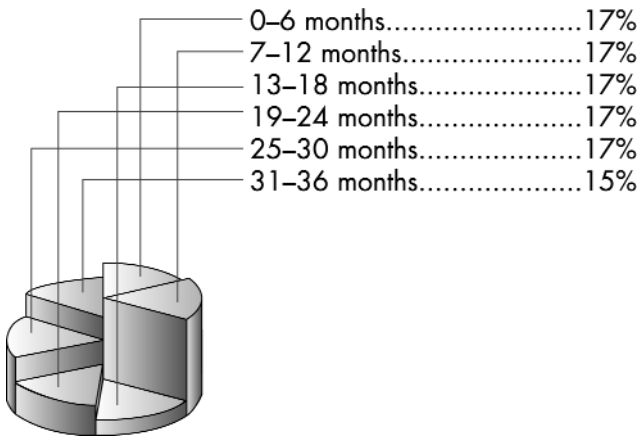
quadrant, combined quadrant, and sensory processing section as:

- **Typical Performance**
- **Probable Difference**
- **Definite Difference**

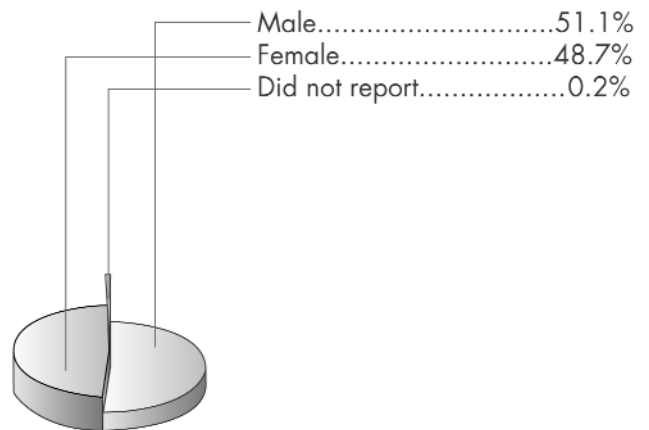
The classification systems help the therapist quickly determine whether a child's performance on the profile is of concern.

The cut scores were derived from the sample of 589 children without disabilities between the ages of birth and 36 months. Cut scores for children birth to 6 months were established using 100 babies without disabilities, and cut scores for children 7 to 36 months were established using 489 children without disabilities.

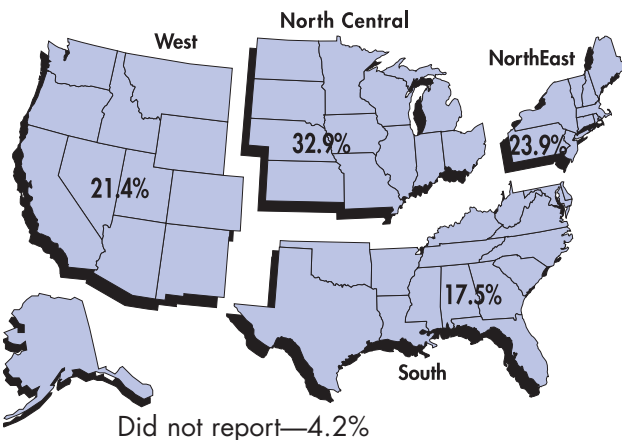
Sample by Age Groups



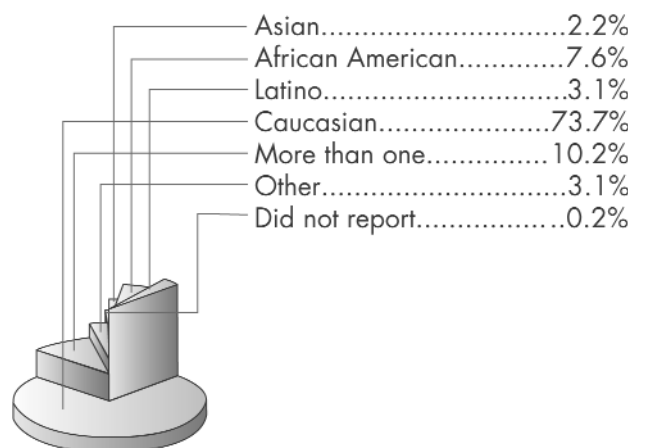
Sample by Gender



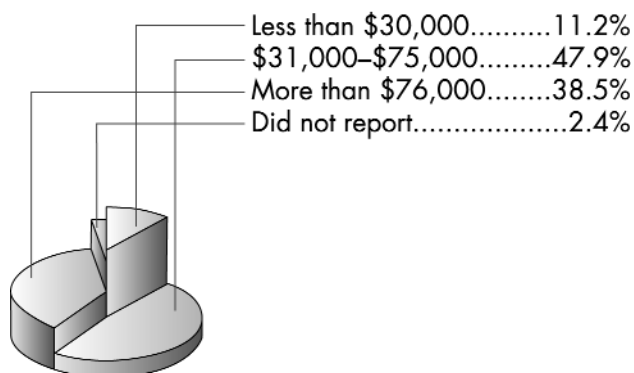
Sample by Region



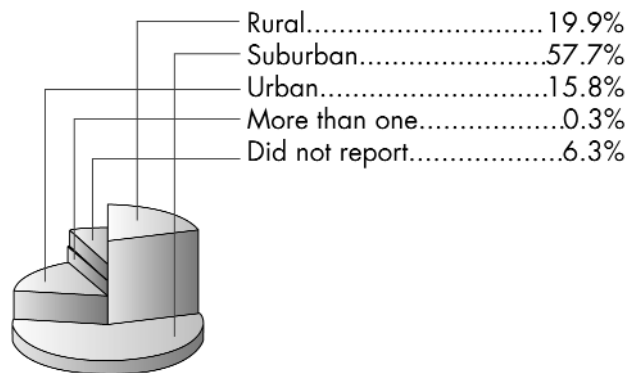
Sample by Race/Ethnicity



Sample by Yearly Income



Sample by Community



Research

The *Infant/Toddler Sensory Profile* research took place from 1998 to 2002 and included more than 1,500 children with and without disabilities between the ages of birth and 36 months and their parents.

The standardization process took place from 2000 to 2001 and included the evaluation of more than 1,100 infants and toddlers with and without disabilities between birth and 36 months of age.

To determine the factor structure, 203 professionals examined 809 children without disabilities between birth and 36 months, which included 422 boys, 385 girls, and two children not identified by gender. The sample included 2% Asian, 6% African American, 2% Latino, 80% Caucasian, and 2% other ethnicities. To better represent the general U.S. population, children with ethnic backgrounds other than Caucasian were selected for the cut score group, and Caucasian children were randomly selected to complete data sets for each age group. Researchers then selected 100

children from each 6-month age group to comprise the cut score sample. There were only 89 children in the 31- to 36-month age group, so this sample contained 589 children total.

Therapists also provided data on 221 children with various disabilities and 64 children who were receiving services but who did not have a diagnosis.

Researchers scored and analyzed all Caregiver Questionnaires from the standardization sample of children without disabilities ($N = 809$) to formulate a scoring structure and provide validity and reliability evidence.

A small sample of Spanish speaking families responded to a translated version of the *Infant/Toddler Sensory Profile*. Children were matched by age and gender with English speaking children from the national sample to make a comparison of language effects. Overall, the Spanish and English speakers in this comparison had the same scores, enabling use of the same cut scores for both groups.

Demographics of Spanish Study

| Demographics $n=29^*$ | | |
|-----------------------|---------|----|
| Gender | Male | 11 |
| | Female | 16 |
| Age Groups in Months | Birth–6 | 2 |
| | 7–12 | 9 |
| | 13–24 | 4 |
| | 25–36 | 14 |

| Demographics $n=29^*$ | | |
|-----------------------|------------------|----|
| Region | Northeast | 0 |
| | North Central | 0 |
| | South | 16 |
| | West | 0 |
| Ethnicity | Native American | 0 |
| | Asian | 1 |
| | African American | 2 |
| | Latino | 22 |
| | Caucasian | 1 |
| | Other | 2 |

* When the data does not add up to n , it means the families did not provide the information.

Reliability and Validity

Two methods were calculated to estimate the reliability of the *Infant/Toddler Sensory Profile*; internal consistency (coefficient alpha) and test-retest stability.

Internal consistency coefficients help to evaluate how homogenous the item responses are within a scale. Coefficient alpha is an index of internal consistency ranging from 0 (no consistency) to 1 (perfect consistency). Coefficient alpha was calculated to examine the internal consistency for each sensory processing and quadrant grouping of the *Infant/Toddler Sensory Profile*. The values of alpha for the various groupings of items for children ages 7 to 36 months ranged from .42 to .86. The values of alpha for the various groupings of items for children from birth to 6 months ranged from .17 to .83.

Test-retest reliability was measured by having a sub sample of the caregivers in the standardization sample rate

their child 2 to 3 weeks after their initial rating for standardization purposes. The sample consisted of 32 children who were between the ages of 7 and 36 months. The test retest correlation coefficient for the sensory processing sections was .86 and for the quadrants was .74. These coefficients indicate that the caregiver rating is somewhat stable over time and is acceptable for identifying target areas for intervention.

To provide evidence of convergent and discriminant validity for the *Infant/Toddler Sensory Profile*, we conducted a study to evaluate the relationship between performance on the *Infant/Toddler Sensory Profile* and selected items/sections of the *Infant/Toddler Symptom Checklist*. As expected, there were large and meaningful correlations between the two instruments.

Clinical Group Findings

Several studies were conducted with groups of children with various disabilities and a group of matched peers. Disabilities represented included pervasive developmental disorders, developmental delays, sensory integrative dysfunction, and reflux, among others. The findings from

these studies provide evidence of the measure's ability to identify infants and toddlers with and without sensory processing difficulties that might interfere with performance in daily life.

Summary

The *Infant/Toddler Sensory Profile* uses a sensory processing and neuroscience frame of reference and supports a family-centered care philosophy by involving the caregivers in

the data-gathering process. It provides the necessary link between performance in daily life and theory to facilitate theory-based decision making.

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Harcourt Assessment, Inc. • 19500 Bulverde Road • San Antonio, Texas 78259-3701

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