

# Therapist–Child Interaction in the Middle Minutes of Sensory Integration Treatment

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Key Words: play and playthings (therapeutic)  
• professional–patient relations • rapport

*The purpose of this study was to describe the management of challenge during therapist–child interaction in sensory integration treatment. This descriptive and relational study of the middle minutes of treatment sessions partially replicated an earlier study of the beginning minutes. One-minute videotape clips taken from the middle minutes of 38 treatment sessions were shown to therapist judges who rated qualities of therapist and child behavior. Two patterns emerged from the correlations of ratings: work and playfulness. Work for the child involved trying hard, cooperating, and seeking assistance, whereas work for the therapist involved assisting and guiding the child. Play for the child included enjoying the activity, being successful and confident, and trying hard. For the therapist, play involved being creative and behaving playfully. Patterns of work and play were different across different levels of challenge to the child.*

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*This article was accepted for publication October 18, 1997.*

Sensory integration theory was developed by Ayres to explain the relationship between neurological processes and behavior (Fisher & Murray, 1991). Although the theory behind treatment is to promote behavioral change by improving neural functioning, the goal of treatment is self-actualization, a spiraling process that involves the child's inner drive, beliefs in skill, satisfaction, sense of mastery, and self-direction (Fisher & Murray, 1991). The therapist's role is to create freedom within structure (Koomar & Bundy, 1991) during the child's exploratory activity, preparing a setting on the basis of the child's needs and desires, and guiding the child's performance in that setting. According to Ayres (1972), "When the optimum-for-growth situation is achieved, the child 'turns on' [showing a] zest for experience" (p. 257). It is hypothesized that this optimum-for-growth situation involves the just-right challenge, a challenge that allows the child to go just beyond his or her current performance level without causing frustration (Koomar & Bundy, 1991), thus encouraging an adaptive, mature response within the child. The therapist–child interaction is critical to achieving the just-right challenge, creating a suitable environment, and providing optimal guidance that requires a therapist and child be attuned to one another.

One tool in the process of achieving the just-right challenge is *scaffolding* (Rogoff, 1990; Rogoff & Gardner, 1984; Wood, Bruner, & Ross, 1976). Scaffolding occurs generally in adult-supported child performance contexts and, thus, occurs during sensory integration treatment (Tickle-Degnen & Coster, 1995). Through scaffolding, the therapist adjusts and controls task elements that are just beyond the child's current skills. This allows the child to focus on the elements that are within his or her abilities and to achieve success in completing a task that he or she would be unable to complete without assistance. The therapist also models and demonstrates while scaffolding, encouraging the child's interest and active participation.

During sensory integration treatment, and, indeed, many adult-supported child performance contexts, play is the medium of the scaffolding experience. Play captures a child's interest as it encourages social, emotional, cognitive, and language development (Bretherton, 1984; Hughes, 1995; Rast, 1986). Bundy (1991) stated that sensory integration treatment "describes a special subset of play transactions in which all activities include enhanced sensory stimulation" (p. 61). In a play context, children are provided with opportunities to safely explore and experience sensory input. Simultaneously, play during treatment supports the development of self-confidence, self-direction, intrinsic motivation, hope, trust, creativity and

experimentation, and skill mastery (Reilly, 1974; Sylva, Bruner, & Genova, 1976).

During sensory integration treatment, the therapist suggests, modifies, and selects activities, taking the child's lead to determine the activity most intrinsically motivating to the child. Through an understanding of developmental sequences (see Michelman, 1974) and sensory-stimulation attributes (see Bundy, 1991), the therapist offers play opportunities appropriate to the child's skills, maturity, and sensory-stimulation needs. These are play activities that "neither overstimulate or underestimate the child's potential" (Michelman, 1974, p. 188), in other words, that create the just-right challenge.

The emotional experience that can accompany the just-right challenge has been described as *flow* (Csikszentmihalyi, 1988, 1990). Flow is hypothesized to reinforce further participation and involvement in activity and appears to typify the experience of play. Csikszentmihalyi (1988) defined flow as an optimal experience requiring "a balance between the challenges perceived in a given situation and the skills a person brings to it" (p. 30). Characteristics of flow include enjoyment; complete physical, cognitive, and emotional involvement in the activity; a distorted sense of time's passage; and a temporary loss of self-awareness. Given the characteristics of flow, their association with play, and their match with sensory integration goals, it is logical to assume that children in sensory integration therapy experience flow during their treatment sessions.

In summary, the literature suggests that optimum-for-growth or just-right challenge situations in sensory integration treatment are signaled by a number of different cues that relate to the quality and structure of the therapist-child interaction. These cues suggest that the child and therapist are working hard to meet the challenges of the therapeutic task, that the task is satisfying and enjoyable to both persons, and that the child is performing the task competently and with confidence. In sensory integration treatment, play and playfulness would be central attributes associated with the attainment and maintenance of these optimal moments.

### Purpose of the Study

To better understand the management of challenge during a therapist-child interaction, this judgment study partially replicated for the middle minutes of sensory integration treatment a previous study by Tickle-Degnen and Coster (1995) that examined the first minutes. Tickle-Degnen and Coster's study found two patterns of interaction—playfulness and task orientation—that were observed in both therapist and child actions and in the dyad's interactions. For the child actions, a pattern of positive response to treatment, including enjoyment and initiative, was

noted as well as patterns of physical effort and assistance seeking. Two patterns of therapist action were observed: therapist intervention, such as modification of the activity and physical assistance, and playfulness. Behaviors were found to be reciprocal and complementary in that the therapist and child tended to be playful together or work hard together. The match of the child's ability to the challenge of the task (the just-right challenge) was found to be highest when the child was playful, initiating, and task oriented. Therapist playfulness, positive feedback, and child requests for guidance were also highly related to the just-right challenge. Together, the therapist and child managed challenge during treatment.

In the current study, occupational therapists and physical therapists rated four sets of qualities that they observed in videotaped clips of the middle minutes of sensory integrative treatment sessions: child action, therapist action, match between child ability and task challenge, and therapist-child rapport. Through these ratings, this study sought to answer the following questions about therapist-child interaction:

- Can attributes of interaction during the middle minutes of sensory integration treatment be measured reliably?
- What is the quality of behavior seen in the middle minutes of sensory integration treatment sessions? Specifically, are there therapist-child patterns that represent associations among scaffolding, play, and the just-right challenge?

## Method

### Design

This was a descriptive and relational study of the middle minutes of sensory integrative treatment, analyzing clips from 38 videotapes of therapist-child dyads filmed during their regularly scheduled 45-min treatment sessions. The videotapes were the same as those used by Tickle-Degnen and Coster (1995).

### Subjects

All occupational therapists working at a single private practice clinic that specializes in sensory integrative treatment were approached for involvement in this study. Twelve therapists (all women) consented and were videotaped during their treatment sessions with children who met the inclusion criteria. All therapists had master's degrees, certification in sensory integration evaluation, and a minimum of 4 year's work experience.

Twenty-one children (4 girls, 17 boys) with sensorimotor deficits related to a learning disability or attention deficit disorder and ranging in age from 3 years to 10 years ( $M = 6$  years) participated in the study. They had

been in treatment for a minimum of 5 weeks and a maximum of 2 years ( $M = 9$  months). Children with a condition of pervasive developmental disorder were excluded from participation. Parental written consent and child verbal consent were obtained before including the children in the study. The consent forms were approved by the Institutional Review Board of Boston University.

### Judges

Seven occupational therapists and two physical therapists in either a master's or doctoral degree program judged the videotape clips. Of the seven women and two men, all but one had experience in pediatrics. All were volunteers, and eight were recruited from a doctoral seminar taught by one of the authors. These judges were different from the ones who participated in Tickle-Degnen and Coster's (1995) study.

### Videotape Procedure

Each of the 21 therapist-child dyads were videotaped during two treatment sessions, with approximately 1 week between sessions. One session was incorrectly videotaped, leaving 41 taped sessions. One-minute clips from the middle minutes of sessions, specifically from 20 min to 30 min into the sessions, were combined into a master tape. Clip order was determined through random selection. Two minutes of blackened tape were laid down after the first two clips, 1 1/2 min after the next two clips, and 1 min after the remaining clips.

The duration of clips (1 min) followed Ambady and Rosenthal's (1992) findings that small segments of behavior (< 5 min) yield a great deal of information, allow accurate predictions, and are as reliably rated as longer observations. They also found that there are no significant differences in ratings of behavioral clips between 30 sec and 5 min long. Other criteria were used to select the clips, including (a) the first performance of a gross motor activity in the 20-min to 30-min time frame of the treatment session or, this condition not being met, in the 15-min to 35-min time frame; (b) a single therapist-child dyad involved in the activity; and (c) both therapist and child visible in the clip. Additionally, if the clip found was part of the first or last therapeutic activity of the treatment session, it was not used. On the basis of these criteria, 3 of the original 41 videotapes were excluded, 2 because clips could not be found that met the criteria and 1 through an accident involving the tape.

### Instrument

A version of the Challenge Management Rating Scales (CMRS) (Gallo, 1991; Tickle-Degnen & Coster, 1995) was used to judge each clip. Gallo's (1991) original

CMRS, developed with the principal investigators, Tickle-Degnen and Coster, included items that the researchers believed were relevant to understanding challenge management and thought to be qualities clinicians could judge quickly from observed behavior without having to refer to clinical theories (e.g., sensory integration theory). On the basis of the reliability findings of Gallo, Tickle-Degnen and Coster (1995) modified the CMRS for their study. For this replication study, a further revision was made to eliminate highly correlating (redundant) items and introduce more items associated with playfulness. This most recent revision had 22 nine-point Likert rating scales, with 0 equal to a low degree of a particular quality and 8 equal to a high degree of a particular quality. The scales included qualities of child action, therapist action, match between child ability and task challenge, and therapist-child rapport (see Table 1).

### Procedure

The master tape was shown to the nine judges at a single 1-hr and 40-min session. Judges rated each clip with the modified CMRS immediately after viewing it. To guide the judges toward making ratings on the basis of overt social behavior and not on clinical inference, they were instructed to rate each clip quickly, using their "gut reaction." The tape was stopped after almost every clip to allow the judges to finish rating it, but for no more than

**Table 1**  
**Reliability (Intraclass Correlations) of the Challenge Management Rating Scales**

| Scale   | Reliability |
|---|-------------|
| Child Action  |             |
| Anxious   | .91         |
| Enjoyment <sup>a</sup>                              | .88         |
| Self-Directed                                       | .87         |
| Confident   | .87         |
| Successful  | .88         |
| Tries Hard  | .84         |
| Seeks Assistance                                    | .78         |
| Creative  | .69         |
| Cooperates  | .92         |
| Therapist Action                                    |             |
| Playfulness <sup>b</sup>                            | .90         |
| Gives Guidance                                      | .66         |
| Physically Assists Child                            | .86         |
| Modification of the Activity                        | .73         |
| Structures Activity                                 | .62         |
| Uses Equipment and Space in Creative Way            | .78         |
| Child-Task Match                                    |             |
| Child Challenged Too Little by Task                 | .74         |
| Task Challenge Matched Child's Ability <sup>c</sup> | .54         |
| Child Overly Challenged by Task                     | .74         |
| Rapport   | .86         |

*Note.* Reliability is the measure of the effective reliability for nine judges rather than the reliability of a single judge. Intraclass correlations (ICCs) were calculated with Shrout and Fleiss's (1979, p. 426) equation ICC (3, k).

<sup>a</sup>A composite formed by averaging the scales of Absorbed, Playful, and Enthusiastic. <sup>b</sup>A composite formed by averaging the scales of Gives Encouragement and Playful. <sup>c</sup>This scale is the measure of the just-right challenge.

30 sec at a time. The nature of this task required that judges make a large amount of ratings (38 clips  $\times$  22 rating items) with very quick responses. Previous studies that used this quick-judgment method (e.g., Ambady & Rosenthal, 1992; Gallo, 1991; Tickle-Degnen & Coster, 1995; Tickle-Degnen & Rosenthal, 1990) obtained adequate reliability and validity. Untrained judges have been found to be accurate and very quick in deciphering obvious and subtle qualities of social behavior (Rosenthal, Hall, DiMatteo, Rogers, & Archer, 1979). In this study, the analyses were not based on a single judge's ratings, but on the average of nine judges' ratings. Averages of ratings are more robust than a single rating partly because idiosyncrasies in each judge's perceptions and biases (e.g., as when one judge consistently rates an item low and another consistently rates it high) tend to cancel each other out. Just as increasing the number of items in a scale tends to increase reliability, increasing the number of judges rating a stimulus tends to increase reliability (Rosenthal, 1982).

#### *Data Analysis*

Principal component analyses with rotated solutions were performed (separately) on both the child and the therapist action variables to determine whether composite variables could be formed to reduce the set of variables being used in the analyses. On the basis of these analyses as well as correlational analyses, two new composites were created: child Enjoyment (created by averaging the ratings of the child actions Absorbed, Playful, and Enthusiastic,  $r = .75$ ) and therapist Playfulness (created by averaging the ratings of the therapist actions of Playful and Gives Encouragement,  $r = .73$ ). The creation of these composites helped to reduce the amount of redundant (highly correlated) information measured in the scales.

Interrater reliability was then calculated for these new composite variables and the other variables with intraclass correlations (ICCs) (Shrout & Fleiss, 1979). These ICCs were a measure of the effective reliability for nine judges rather than that of a single judge. A reliability coefficient of .70 was used as the criterion for determining whether a measured variable demonstrated high reliability.

Correlational analyses were then performed on the data in order to examine patterns between (a) therapist action and child action and (b) task-challenge match and therapist and child actions. Separate analyses for the first and second treatment sessions were performed, with the two sets of correlations averaged with Fisher's  $z$  transformations. The magnitude of the relationship was the important consideration in these analyses (with  $< .10$  = negligible relationship,  $.10-.20$  = small relationship,  $.20-.30$  = small to moderate relationship,  $.30-.50$  = moderate relationship, and  $.50$  = large relationship [Cohen, 1988]).

## Results

### *Reliability of the CMRS*

The reliability coefficients of the child action scales averaged .86, whereas those for the therapist action scales averaged .78. Two of the child-task match scales had adequate reliability coefficients of .74; however, Task Challenge Matched Child's Ability had lower reliability, with an ICC of .54 (see Table 1).

### *Description of Child Action*

One observed pattern was an effort or work pattern, with Tries Hard and Cooperates highly correlated. Another observed pattern was a playfulness, flow pattern, with Confident, Successful, Enjoyment, Creative, Self-Directed, Seeks Assistance (negative relationship), Anxious (negative relationship) highly correlated. Tries Hard was also highly correlated with Enjoyment and Successful, indicating another aspect of the flow dimension (i.e., physical and cognitive involvement [Trying Hard] and emotional involvement [Enjoyment] in an activity along with success) (see Table 2).

### *Description of Therapist Action*

Two patterns emerged from these correlations. One was a playful dimension, with Playfulness and Uses Equipment and Space in Creative Way highly correlating. The other was an assistance, work-oriented dimension, with Physically Assists Child and Gives Guidance also correlating highly. Modification of the Activity correlated highly with variables in both the playfulness and work patterns (see Table 3).

### *Description of Therapist-Child Interaction*

Two distinct patterns of interaction emerged: a competence-work complement and a flow-playful complement. Child anxiousness, lack of confidence and self-direction, and increased assistance seeking were strongly correlated with the therapist providing structure, physical assistance, and guidance. Child creativity, enjoyment, trying hard, and cooperating were highly correlated with the therapist's playfulness and creativity and with the therapist-child rapport (see Table 4).

### *Description of Challenge Management*

The more underchallenging the task relative to the child's ability (Child Challenged Too Little by Task) the less the child demonstrated anxiousness and assistance seeking and the more he or she demonstrated confidence, success, and creativity. Furthermore, the less challenging the task to the child, the less the therapist guided and physically assisted the child. In contrast, a stronger but reversed pat-

**Table 2**  
**A Description of Child Action: Correlations Between Child Action Variables**

| Scale            | Scale             |                  |                   |                   |                  |                  |                  |          |
|------------------|-------------------|------------------|-------------------|-------------------|------------------|------------------|------------------|----------|
|                  | Anxious           | Enjoyment        | Self-Directed     | Confident         | Successful       | Tries Hard       | Seeks Assistance | Creative |
| Enjoyment        | -.25              |                  |                   |                   |                  |                  |                  |          |
| Self-Directed    | -.41 <sup>a</sup> | .47 <sup>a</sup> |                   |                   |                  |                  |                  |          |
| Confident        | -.84 <sup>b</sup> | .56 <sup>b</sup> | .65 <sup>b</sup>  |                   |                  |                  |                  |          |
| Successful       | -.37 <sup>a</sup> | .60 <sup>b</sup> | .25               | .62 <sup>b</sup>  |                  |                  |                  |          |
| Tries Hard       | .06               | .52 <sup>b</sup> | .03               | .10               | .59 <sup>b</sup> |                  |                  |          |
| Seeks Assistance | .61 <sup>b</sup>  | -.18             | -.43 <sup>a</sup> | -.57 <sup>b</sup> | -.12             | .24              |                  |          |
| Creative         | -.41 <sup>a</sup> | .64 <sup>b</sup> | .62 <sup>b</sup>  | .66 <sup>b</sup>  | .35 <sup>a</sup> | .20              | -.25             |          |
| Cooperates       | .15               | .09              | -.46 <sup>a</sup> | -.14              | .39 <sup>a</sup> | .60 <sup>b</sup> | .38 <sup>a</sup> | .04      |

Note.  $n = 21$ . Correlations are averages (after Fisher's  $z$  transformation) for first and second treatment sessions.

<sup>a</sup>Correlation  $\geq .30$ . <sup>b</sup>Correlation  $\geq .50$ .

tern of therapist and child action occurred in relation to overly challenging tasks. With increasing overchallenge, the child demonstrated less flow-like attributes, and the therapist worked more at assisting the child. The therapist's playfulness and creativity were uncorrelated with the degree of overchallenge in the task but were mildly negatively correlated with the degree of underchallenge (see Table 5).

Task Challenge Matched Child's Ability, the operationalized variable of the just-right challenge, was positively correlated with the child trying hard, cooperating, seeking assistance, and demonstrating anxiety. Despite the child's increased anxiety (and mildly decreased self-directiveness and confidence), there was a mild increase in enjoyment and success, suggesting a complex type of behavior with both positive and negative attributes (e.g., seriousness or care and concern). The higher the degree of challenge match, the more the therapist demonstrated creativity and playfulness. Therapist work-oriented assistance had a generally small but positive association with the just-right challenge.

## Discussion

### *Reliability of the CMRS in the Middle Minutes*

The interrater reliability of the CMRS was generally adequate, with most items achieving the criterion of .70. The average reliability (average ICC = .79) was virtually equivalent to that of Tickle-Degnen and Coster's (1995) earlier version (average ICC = .80), despite 10 fewer items in the

newer version. This finding suggests that the newer and less time-consuming version may be used for research without significantly compromising reliability. In the future, use of the instrument with more than nine judges will further enhance individual item reliability. It should be noted that the lower reliability items used in this study would not inflate associations but, rather, would be conservative (smaller than true associations) secondary to increased error in the calculations (Cook & Campbell, 1979).

### *Patterns of Therapist-Child Interaction*

The patterns of correlations among therapist and child actions generally were consistent with Tickle-Degnen and Coster's (1995) findings, supporting the construct validity of the management of challenge through therapist-child interaction during treatment. Overall, two patterns emerged from the middle minutes of treatment: playfulness and work. Play for the child involved enjoying the activity, being creative, being successful and confident, and trying hard. This pattern of association suggests that children varied in the degree to which they appeared to be in a state of flow, with intense and satisfying involvement in the task. For the therapist, play involved being creative with the activity and behaving playfully. For the child, work involved trying hard, cooperating, and seeking assistance, whereas for the therapist, work included assisting and guiding the child.

The findings suggest that therapists scaffold the child

**Table 3**  
**A Description of Therapist Action: Correlations Between Therapist Action Variables**

| Scale                                    | Scale            |                  |                          |                              |                     |
|--|------------------|------------------|--------------------------|------------------------------|---------------------|
|  | Playfulness      | Gives Guidance   | Physically Assists Child | Modification of the Activity | Structures Activity |
| Gives Guidance                           | .34 <sup>a</sup> |                  |                          |                              |                     |
| Physically Assists Child                 | .24              | .55 <sup>b</sup> |                          |                              |                     |
| Modification of the Activity             | .54 <sup>b</sup> | .36 <sup>a</sup> | .49 <sup>a</sup>         |                              |                     |
| Structures Activity                      | .38 <sup>a</sup> | .51 <sup>b</sup> | .19                      | .25                          |                     |
| Uses Equipment and Space in Creative Way | .70 <sup>b</sup> | .09              | -.02                     | .25                          | .36 <sup>a</sup>    |

Note.  $n = 21$ . Correlations are averages (after Fisher's  $z$  transformation) for first and second treatment sessions.

<sup>a</sup>Correlation  $\geq .30$ . <sup>b</sup>Correlation  $\geq .50$ .

**Table 4**  
**A Description of Child-Therapist Interaction: Correlations Between Child and Therapist Action**

| Therapist Action                            | Child Action     |                   |                   |                   |                   |                  |                  |                   |                  |                  |
|---|------------------|-------------------|-------------------|-------------------|-------------------|------------------|------------------|-------------------|------------------|------------------|
|   | Anxious          | Enjoyment         | Self-Directed     | Confident         | Successful        | Tries Hard       | Seeks Assistance | Creative          | Cooperates       | Rapport          |
| Playfulness                                 | .31 <sup>a</sup> | .39 <sup>a</sup>  | -.30 <sup>a</sup> | -.16              | .13               | .38 <sup>a</sup> | .47 <sup>a</sup> | .20               | .42 <sup>a</sup> | .84 <sup>b</sup> |
| Gives Guidance                              | .46 <sup>a</sup> | -.21              | -.38 <sup>a</sup> | -.38 <sup>a</sup> | -.29              | -.12             | .50 <sup>b</sup> | -.35 <sup>a</sup> | .11              | .10              |
| Physically Assists Child                    | .63 <sup>b</sup> | -.35 <sup>a</sup> | -.48              | -.69 <sup>b</sup> | -.42 <sup>a</sup> | -.10             | .57 <sup>b</sup> | -.50 <sup>b</sup> | .07              | .03              |
| Modification of the Activity                | .32 <sup>a</sup> | -.02              | -.20              | -.33 <sup>a</sup> | -.33 <sup>a</sup> | -.15             | .39 <sup>a</sup> | .02               | -.08             | .30 <sup>a</sup> |
| Structures Activity                         | .25              | .03               | -.46 <sup>a</sup> | -.32 <sup>a</sup> | .06               | .13              | .45 <sup>a</sup> | .01               | .39 <sup>a</sup> | .36 <sup>a</sup> |
| Uses Equipment and Space<br>in Creative Way | .18              | .38 <sup>a</sup>  | -.11              | .05               | .36 <sup>a</sup>  | .55 <sup>b</sup> | .46 <sup>a</sup> | .45 <sup>a</sup>  | .38 <sup>a</sup> | .70 <sup>b</sup> |
| Rapport                                     | .20              | .58 <sup>b</sup>  | -.14              | .13               | .41 <sup>a</sup>  | .57 <sup>b</sup> | .34 <sup>a</sup> | .41 <sup>a</sup>  | .52 <sup>b</sup> |                  |

Note.  $n = 21$ . Correlations are averages (after Fisher's  $z$  transformation) for first and second treatment sessions.

<sup>a</sup>Correlation  $\geq .30$ . <sup>b</sup>Correlation  $\geq .50$ .

performance with different forms of action for different levels of task challenge. In underchallenging situations, little therapist action of either the work or play type, but especially the work type, occurred. As tasks became less underchallenging (i.e., more challenging) to the child, therapists intervened more. In just-right challenging situations, therapists were playful and creative, whereas in overly challenging situations, therapists appeared to be working hard to provide direct help to children.

The patterns of association clearly indicated the mutual interdependence of the therapist and child's actions. In general, the therapist and child were playful together, and they worked hard together to meet the challenges of the therapeutic activities (see Table 4). This general pattern is one of reciprocity, with therapist work matched to child work and therapist play matched to child play. The most notable exception to this reciprocity was found in relation to just-right challenge situations. These situations were marked by therapist playfulness, whereas the child

worked and appeared somewhat anxious. Tickle-Degnen and Coster (1995) found both the therapist and the child to demonstrate playfulness during just-right challenges in the beginning minutes of the session, even while the child was working hard. It is possible that just-right challenges have different interactional characteristics at different points in the session, possibly with children being more aware of challenges to their ability (thus displaying more anxiety) during later minutes. This possibility is highly speculative and requires more research. Nonetheless, the association of anxiety with the just-right challenge in the middle minutes is provocative because this association is not what we would expect in high flow, optimum-for-growth moments.

#### *What Is the Optimum-for-Growth Moment?*

This study described action and interaction during treatment. It did not provide evidence related to what type of interaction or challenge is most therapeutic during senso-

**Table 5**  
**A Description of Challenge Management: Correlations Between Action and Task Challenge**

| Type of Action                           | Child-Task Match            |                                   |                            |
|--|-----------------------------|-----------------------------------|----------------------------|
|  | Underchallenge <sup>a</sup> | Just-Right Challenge <sup>b</sup> | Overchallenge <sup>c</sup> |
| <b>Child Action</b>                      |                             |                                   |                            |
| Anxious                                  | -.70 <sup>e</sup>           | .30 <sup>d</sup>                  | .71 <sup>e</sup>           |
| Enjoyment                                | .12                         | .25                               | -.42 <sup>d</sup>          |
| Self-Directed                            | .28                         | -.28                              | -.35 <sup>d</sup>          |
| Confident                                | .70 <sup>e</sup>            | -.25                              | -.71 <sup>e</sup>          |
| Successful                               | .45 <sup>d</sup>            | .23                               | -.62 <sup>e</sup>          |
| Tries Hard                               | -.29                        | .70 <sup>e</sup>                  | -.20                       |
| Seeks Assistance                         | -.48 <sup>d</sup>           | .52 <sup>e</sup>                  | .51 <sup>e</sup>           |
| Creative                                 | .30 <sup>d</sup>            | .05                               | -.39 <sup>d</sup>          |
| Cooperates                               | -.12                        | .55 <sup>e</sup>                  | -.07                       |
| <b>Therapist Action</b>                  |                             |                                   |                            |
| Playfulness                              | -.23                        | .45 <sup>d</sup>                  | .09                        |
| Gives Guidance                           | -.32 <sup>d</sup>           | .08                               | .54 <sup>e</sup>           |
| Physically Assists Child                 | -.43 <sup>d</sup>           | .25                               | .41 <sup>d</sup>           |
| Modification of the Activity             | -.25                        | .09                               | .31 <sup>d</sup>           |
| Structures Activity                      | -.22                        | .28                               | .31 <sup>d</sup>           |
| Uses Equipment and Space in Creative Way | -.16                        | .55 <sup>e</sup>                  | .05                        |
| Rapport                                  | -.13                        | .53 <sup>e</sup>                  | -.07                       |

Note.  $n = 21$ . Correlations are averages (after Fisher's  $z$  transformation) for first and second treatment sessions.

<sup>a</sup>Measured by the scale, Child Challenged Too Little by Task. <sup>b</sup>Measured by the scale, Task Challenge Matched Child's Ability. <sup>c</sup>Measured by the scale, Child Overly Challenged by Task. <sup>d</sup>Correlation  $\geq .30$ . <sup>e</sup>Correlation  $\geq .50$ .

ry integration treatment. It is possible that the optimum-for-growth moment (Ayres, 1972) is a culminating moment that must be embedded within moments of fun and moments of failure. Overchallenges would allow the child to experience failure without dire consequences, underchallenges would allow the child to experience playful respite and relaxation, and just-right challenges would allow the child to experience mastery.

Although the study's findings cannot provide clinicians with prescriptions to increase therapeutic effectiveness, clinicians can use them to describe the process of treatment to parents and children in order to help clarify the complex strategies that are operating in a treatment that, superficially, looks like simple fun. Furthermore, the findings serve to underscore the need for research addressed to understanding mechanisms other than neurological ones that may be crucial to maximizing the effectiveness of sensory integration treatment. ▲

### Acknowledgments

We thank Cay Reilly, MS, OTR/L, Laura Rogers, MS, OTR, Julie Pope, MS, OTR, the therapist judges, and the therapists and children of Occupational Therapy Associates, Watertown, Massachusetts, for their participation.

This study was part of a larger body of research examining therapist-child interaction during sensory integration treatment and was funded by the American Occupational Therapy Foundation, the American Occupational Therapy Association, and Boston University's Neurobehavioral Rehabilitation Research Center for Scholarship and Research.

This article is based on a thesis written in partial fulfillment of the requirements for the first author's degree of master of science in occupational therapy from the Sargent College of Health and Rehabilitation Sciences, Boston University.

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