Somatic assessment of nonverbal social skills in children with Down syndrome: Using the Kestenberg Movement Profile as a tool for treatment planning

Keta R. Gass a , J. Ryan Kennedy a,b , Suzanne Hastie c,d & Heidi McCardell Wentworth

a Noeticus Counseling Center and Training Institute, Denver, USA
b Somatic Counseling Psychology, Naropa University, Boulder, USA
c Drexel University, Philadelphia, USA
d Twin Ponds Integrative Health Center, Breinigsville, PA, USA

Somatic assessment of nonverbal social skills in children with Down syndrome: Using the Kestenberg Movement Profile as a tool for treatment planning

Keta R. Gass*, J. Ryan Kennedyab, Suzanne Hastied and Heidi McCardell Wentworth

aNoiticus Counseling Center and Training Institute, Denver, USA; bSomatic Counseling Psychology, Naropa University, Boulder, USA; cDrexel University, Philadelphia, USA; dTwin Ponds Integrative Health Center, Breinigsville, PA, USA

(Received 23 November 2011; final version received 22 October 2012)

The focus of this quasi-experimental pilot study is how to support the emergence of the full potential development of nonverbal social skills in children with Down syndrome (DS). It is an exploratory case study using an embedded-multiple case design. This study views working with the social skills of a 6-year-old girl with DS through the lens of the Kestenberg Movement Profile (KMP). Through this lens, the social intelligence, relational shaping, developmental movement, and nonverbal communication of a child with DS were explored. In order to more accurately identify the child’s strengths and challenges a triangulation approach is used. Data were collected for the child with DS and her typically developing, fraternal, twin sister using the Vineland Adaptive Behavior Scales-II as a quantitative assessment tool, the KMP as a qualitative assessment tool, and from a naturalistic observation in their home environment in order to assess and compare their nonverbal social skills.

Keywords: Down syndrome; Kestenberg Movement Profile; social intelligence; developmental movement; nonverbal communication

Introduction

Movement is a relating experience and current research suggests that using movement as an intervention for children with Down syndrome (DS) can support the development of not only their quality of movement but also the relationship it has to social development, emotional development, cognitive development, and inclusion (Jobling, Virji-Babul, & Nichols, 2006; Latash, 2000; Virji-Babul, Kerns, Zhou, Kapur, & Shiffrar, 2006). This pilot study explores the use of the Kestenberg Movement Profile (KMP) and its related

*Corresponding author. Email: keta.gass@gmail.com
descriptive body/movement analysis tool Laban Movement Analysis (LMA) for assessment and the creation of treatment plans when working with children with DS.

The Kestenberg Movement Profile
The KMP is a system for assessing and describing movement patterns (nonverbal behaviour) of individuals of all ages. It is developmentally organised and built upon the framework of LMA to link the ways movement patterns evolve within the context of development, both individually and in how a person relates to others across the entire developmental span (Sossin, 1987). The KMP, developed by Judith Kestenberg and her research team, bridges the work of Rudolf Laban, Warren Lamb, and Irmgard Bartenieff with a developmental and psychodynamic perspective and includes the works of Marion North (Hastie, 2006; Lewis & Loman, 1990) and Anna Freud (Kestenberg, 1975).

In the KMP each movement pattern has intrinsic developmental significance and psychological meaning (Sossin, 2007). These movement patterns are used to assess an individual’s developmental progress, learning styles, affect, defence mechanisms, personality characteristics, and relational styles. Additionally, the developmental movement patterns inherent in the KMP provide the nonverbal foundations of relational development, or social intelligence, and can assess the accord or discord between individuals involved in interaction and an individual’s modulation of affect (Loman & Foley, 1996; Sossin, 2007).

In the KMP nine distinct classes of movements are indicative of:

- Needs and drives (Tension Flow Rhythms);
- Affects/temperament pertaining to safety/danger and pleasure/displeasure (Tension Flow Attributes);
- Defences and learning styles (Precursors of Effort);
- Ego-controls, coping styles, and masteries (Effort);
- Affects pertaining to comfort/discomfort and self-feelings (Bipolar Shape Flow);
- Approach-avoidance affects (Unipolar Shape Flow);
- Culturally-influenced manners of traversing kinespheric space (Shape Flow Design);
- Manners of localising, defining, and defending against people and/or environmental objects (Shaping in Directions);
- Manners of relating in a complex and multidimensional way with internalised relationships (Shaping in Planes; Sossin, 2007).

The Profile includes two systems that are arranged vertically to reflect developmental progression (see Table 1). System I is the Tension-Flow/Effort system, which shows the quality and feeling of movement in the left column of the diagram. System II is the Shape-Flow/Shaping system, which shows the
Table 1. Overview of the Kestenberg Movement Profile.

<table>
<thead>
<tr>
<th>SYSTEM I</th>
<th>SYSTEM II</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GENERAL THEMES</strong></td>
<td><strong>GENERAL THEMES</strong></td>
</tr>
<tr>
<td>• Tension-Flow / Effort System</td>
<td>• Shape-Flow / Shaping System</td>
</tr>
<tr>
<td>• Ego Development / Body Attitude</td>
<td>• Relational Development</td>
</tr>
<tr>
<td>• Attunement - Reflects Empathy</td>
<td>• Adjustment - Reflects Trust</td>
</tr>
<tr>
<td>• Rooted in Self Psychology Theory</td>
<td>• Rooted in Object Relations Theory</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>TENSION-FLOW RHYTHMS</strong> (Needs and Drives)</th>
<th><strong>BIPOLAR SHAPE FLOW</strong> (Responses to Global Environment; Self Feelings; Comfort)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Libidinal (Indulging)</strong></td>
<td><strong>Growing</strong></td>
</tr>
<tr>
<td>1. Sucking (00)</td>
<td>1. Widening</td>
</tr>
<tr>
<td>2. Twisting (a)</td>
<td>2. Lengthening</td>
</tr>
<tr>
<td>3. Running/Drifting (a)</td>
<td>3. Bulging</td>
</tr>
<tr>
<td>4. Swinging/Undulating (q)</td>
<td></td>
</tr>
<tr>
<td>5. Jumping (qg)</td>
<td></td>
</tr>
<tr>
<td><strong>Sadiest (Fighting)</strong></td>
<td></td>
</tr>
<tr>
<td>Snapping/Bitting (oa)</td>
<td>Symmetrical Growth and Shrinking</td>
</tr>
<tr>
<td>Straining/Releasing (aa)</td>
<td>Breathing pattern is foundational</td>
</tr>
<tr>
<td>Starting/Stopping (pp)</td>
<td>Generalised responses to the environment; Comfort and Discomfort</td>
</tr>
<tr>
<td>Surging/Burting (qp)</td>
<td></td>
</tr>
<tr>
<td>Spurring/Running (qg)</td>
<td></td>
</tr>
<tr>
<td><strong>Rhythmic patterns created by changes in muscle tension</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Alternations between Bound and Free Flow</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Corresponds to Inner Needs (Physical) and Drives (Psychological)</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>TENSION-FLOW ATTRIBUTES</strong> (Individual Feelings and Affects/Temperament)</th>
<th><strong>SHAPE-FLOW DESIGN</strong> (Uses of Designs in Space)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Libidinal (Indulging)</strong></td>
<td><strong>Growing</strong></td>
</tr>
<tr>
<td>1. Flow Adjustment</td>
<td>1. Looping</td>
</tr>
<tr>
<td>2. Low Intensity</td>
<td>2. Low Amplitude</td>
</tr>
<tr>
<td>High Intensity</td>
<td>Angular Reversal</td>
</tr>
<tr>
<td>3. Gradualness</td>
<td>3. Rounded Reversal</td>
</tr>
<tr>
<td>Absence</td>
<td></td>
</tr>
<tr>
<td><strong>Sadiest (Fighting)</strong></td>
<td></td>
</tr>
<tr>
<td>Even Flow</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Animated (Indulging and Fighting) and Neutral Qualities</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Regulate the flow of tension and Relate to feelings of pleasure and safety (easy) and displeasure and danger (caution)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>PRECURSORS OF EFFORT (PRE-EFFORT)</strong> (Defences and Learning/Coping Styles)</td>
<td><strong>SHAPING IN DIRECTIONS (DIRECTIONAL)</strong> (Bridging Self with the Environment; Defining)</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td><strong>Libidinal (Indulging)</strong></td>
<td><strong>Growing</strong></td>
</tr>
<tr>
<td>1. Flexibility</td>
<td>1. Sideways Open</td>
</tr>
<tr>
<td>Channelling</td>
<td></td>
</tr>
<tr>
<td>2. Gentleness</td>
<td>2. Upward</td>
</tr>
<tr>
<td>Vehemence/Straining</td>
<td></td>
</tr>
<tr>
<td>3. Hesitation</td>
<td>3. Forward</td>
</tr>
<tr>
<td>Suddenness</td>
<td></td>
</tr>
<tr>
<td><strong>EFFORT</strong> (Effective Coping; Clear Ego Control; Mastery)</td>
<td><strong>SHAPING IN PLANES (CARVING)</strong> (Complex Relationships with Others; Adaptability)</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td><strong>Libidinal (Indulging)</strong></td>
<td><strong>Growing</strong></td>
</tr>
<tr>
<td>1. Indirect</td>
<td>1. Spreading (Storring)</td>
</tr>
<tr>
<td>Direct</td>
<td></td>
</tr>
<tr>
<td>2. Light</td>
<td>2. Rising (Ascending)</td>
</tr>
<tr>
<td>Strong</td>
<td></td>
</tr>
<tr>
<td>3. Deceleration (Sustained)</td>
<td>3. Advancing</td>
</tr>
<tr>
<td>Acceleration (Quick)</td>
<td></td>
</tr>
<tr>
<td><strong>Effective and mature ways of coping with the environment</strong></td>
<td><strong>Movement in elliptical patterns (Shaping/Carving)</strong></td>
</tr>
<tr>
<td><strong>Outer focus; Inner attitudes toward external realities of Space, Weight, and Time and thus Attention, Intention, and Decision-Making</strong></td>
<td>Multidimensional (one or more planes)</td>
</tr>
<tr>
<td></td>
<td><strong>Adapting to a complex world with internalised relationships</strong></td>
</tr>
</tbody>
</table>

Development of relational movement in the right column of the diagram. Additionally, the profile includes the Body Attitude of a mover (Hastie, 2006).

System I includes four diagrams on the left side of the profile that form a developmental sequence: Tension Flow Rhythms, Tension Flow Attributes, Precursors of Effort, and Effort. These diagrams create a movement portrait of needs, feelings and temperaments, defences and learning style, and coping strategies (Amighi, Loman, Lewis, & Sossin, 1999). The four diagrams are further divided into the movement polarities, Indulging and Fighting.
Underlying System I are two Animated Flow factors, Free Flow, or unrestricted muscle movement, and Bound Flow, restricted muscle movement. Deanimated or Neutral Flow is the lack of muscle tension.

System II includes five diagrams on the right side of the profile: Bipolar Shape Flow, Unipolar Shape Flow, Shape Flow Design, Shaping in Directions, and Shaping in Planes. These diagrams reflect a line of development of self feelings, responses to stimuli in the environment, use of designs in Space, use of directional movements, and complex movement in relationship with others. In System II, the two movement factors that underlie the diagrams are Shrinking and Growing Shapes. Shrinking Shapes reduce contact with the environment, and Growing Shapes increase contact with the environment. The inhalation and exhalation of breath is a foundational Growing and Shrinking structure in the body. The Shrinking and Growing of the body gives Shape to the Free Flow of empathy, which is related to Growing into the environment and people with a sense of trust and trustworthiness; and the binding (inhibiting) of empathy is related to Shrinking away from the environment and people, which is related to mistrust (Kestenberg, 1985).

Table 1 provides an overview of the structure of the KMP including all nine diagrams. Both Systems I and II denote a vertical developmental progression that develops from the top down, although development is never seen as strictly linear or specifically sequential. Each diagram includes the developmental sequencing of the movement patterns for that group of movements. The horizontal affinities between the diagrams of System I and System II are also highlighted in the table.

A complete profile shows where an individual has affinities and clashes. In addition it shows where her movements are balanced and imbalanced. The profile also looks for matches and mismatches between Systems I and II. Matching between Efforts and Shaping in Planes reflects harmony between ways of coping with Space, Weight, and Time in the Horizontal, Vertical, and Sagittal planes. Some examples of matching in these patterns are using Indirectness with Spreading and using Strength with Descending. Spatial Movements, Indirect or Direct, relate to attention; Weighted movements, Light or Strong, relate to intention; and Time movements, Decelerated or Accelerated, relate to decision making.

Notating adult movement usually only requires animated conversation, but notating children requires observing them during both active and quiet activities (Loman & Foley, 1996). The psychometrics of the KMP show established reliability (Koch, 2006; Koch, Cruz, & Goodill, 2002; Sossin, 1987) and partial validity (Koch, 2007a, 2007b; Winter, 1992). Normative data was collected during the early development of the KMP. Kestenberg constructed profiles of children who had also been developmentally assessed by Anna Freud. The correlations between Kestenberg’s and Freud’s profiles were found to be good (Kestenberg, 1975).

In his observation of dyads of a parent and a child with a disability, Sossin (1993) observed that the child experiences a high proportion of constricted rhythms which limits the development of a sense of self-regulation. This is because the neurodevelopment of children with disabilities can impede self- and
other-regulatory experiences of rhythmicity, kinesthetic attunement, use of emotional parental referencing, senses of affectivity and continuity, and attainment of intersubjectivity (Sossin, 1993). Because of the child’s constricted rhythms and the resulting limited self-regulation, her sense of self-agency is diminished, delayed, and distorted due to her inability to act on her own behalf (Sossin, 1993).

**Down syndrome**

Down syndrome (DS) is the most common genetic cause for intellectual disability and it occurs in all races, nations, ethnic groups, and socio-economic classes (Sherman, Allen, Bean, & Freeman, 2007). It is the most frequently occurring chromosomal abnormality and occurs in approximately one out of 733 live births in the United States (Sherman et al., 2007). Approximately 95% of individuals with DS, also called trisomy 21, have three copies of chromosome 21 instead of two resulting in a total of 47 chromosomes instead of the usual 46 (Fidler, Hepburn, & Rogers, 2006). Children with DS often have stronger receptive language skills than expressive language skills making it challenging to assess them directly (Abbeduto et al., 2001).

Although some older studies show strengths in social functioning (Fidler et al., 2006), there is emerging evidence that individuals with DS have difficulties in interpreting social and emotional cues and understanding mental states (Kasari, Freeman, & Bass, 2003; Wishart, Cebula, Willis, & Pitcairn, 2007). Recent studies (Cuckle & Wilson, 2002; Guralnick, 2002) show that peer relations in general are often problematic for children with DS.

**Down syndrome and movement**

The movement patterns of children with DS lack fluency in part because the children take longer to initiate a movement, have slower movement times, and tend to treat a movement sequence as a series of separate tasks (Jobling et al., 2006). A longitudinal study of motor proficiency in children with DS showed that balance, bilateral coordination, response speed, postural responses, and postural stability are areas of weakness (Jobling, 1999). To perform a movement task fast and accurately the body needs to be stabilised in the core, or posture, before movement of the limbs takes place (Anson & Mawston, 2000). In this sense accurate movements are performed in a proximal-to-distal sequence, or moving from near the body to away from the body. The distal movement is described with the path of the limb through Space when reaching and grasping an object. In studies of the movement sequencing in DS, this sequence is reversed and occurs in a distal-to-proximal order with stabilisation not seeming to be a high priority of the motor system in individuals with DS (Anson & Mawston, 2000).

Children with DS have a hard time matching motor output with environmental demands and tend to break motor tasks into separate components (Jobling et al., 2006). Charlton, Ibsen, and Lavelle (2000) report
that children with DS have a dysfunction in relating information about limb position with respect to the environment and task demands. For example, when encountering a curb during walking, a child with DS may break the process down into walking to the curb, stopping, stepping up on the curb, stopping, and then continuing to walk instead of seamlessly changing the gait of her walk.

However, research in motor coordination in DS shows that practice does lead to a dramatic improvement of motor performance (Latash, 2000). Jobling (1993) advocates the use of LMA-based movement education for play programmes as a language of expression and communication for young children with DS.

Working with movement capitalises on the strengths of visual memory, visual imitation, receptive language, and nonverbal communication in the emerging phenotype of children with DS (Fidler, 2005). The term emerging phenotype is used here to indicate that there is an ongoing and complex interconnected relationship among the genotype or genetic expression of the individual, the social environment in which she lives, and the ongoing experiences that shape and reformulate neural networks. Working with movement can also provide the scaffolding to develop the gross motor skills, expressive language, spatial memory, and interpretation of social and emotional cues which are challenging for children with DS in the emerging phenotype (Fidler, 2005). Additionally, working with movement may improve the slower movement, lack of fluency in movement, and slower timing of social interactions observed in children with DS (Jobling et al., 2006; Mundy, Sigman, Kassari, & Yirmiya, 1988). This is supported by studies (Jobling et al., 2006; Latash, 2000) that show practice does lead to the improvement of motor skills, balance, expression, and communication in children with DS.

**Down syndrome and social communication**

The ability to recognise facial expressions is central to forming social relationships. Drawing from prior studies, Williams, Wishart, Pitcairn, and Willis (2005) showed that children with DS had specific difficulties in processing emotional expression and theorised that it is evidence that cognitive pathways of children with DS are markedly different than those of typical children. This study and others have found that children with DS may experience difficulties with some very specific aspects of sociocognitive understanding, including empathising, requesting behaviours, and social referencing (Williams et al., 2005).

Understanding these nonverbal communications is a challenge for children with DS due to delayed intellect and slower processing times needed for visual-motor processing, motor planning, and reading social-emotional cues. Additionally, children with DS have been observed to have a certain level of passivity and slowness when interacting with objects, people, and the environment (Henderson, Illingworth, & Allen, 1991; Linn, Goodman, &
Lender, 2000; Mundy et al., 1988). This slower locomotion may also affect the timing of social interactions.

Another element of social-emotional competence is emotion regulation. Emotion regulation is the ability to modulate emotional reactivity when faced with a frustrating task or situation. Regulating emotion includes skills such as self-soothing, reappraisal of a task or situation, and distraction. Jahromi, Gulsrud, and Kasari (2008) explain that the association between high frustration and problem behaviour is whether or not a child has effective emotional regulation. In a study of the emotional competence of children with DS, the authors found that children with DS have been observed to have a limited range of strategies when dealing with tasks involving negativity (Jahromi et al., 2008).

Studies by Wright, Lewis, and Collis (2006) show that children with DS are more likely to adopt imitative solutions to tasks rather than a more pragmatic approach where they rely more heavily on social cues than typical children. A collaborative learning study by Wishart, Willis, Cebula, and Pitcairn (2007) showed that the sociability attributed to children with DS did not support either their or their partner’s learning in this social context. Guralnick (2002) showed that peer relations are often problematic in general for children with DS.

Berger and Cunningham (1986) showed that mothers of children with DS tend to use more tactile and kinesthetic modes of stimulation (compared to visual and auditory) with their children with DS. They speculate this is due to the mother’s compensating for their children’s deficit in responding to visual and auditory stimulation. This is supported by a more recent study by Wang, Bernas, and Eberhand (2001) that showed the children with DS respond better to scaffolding that involves both speech and Gestures (visual) than to scaffolds that involve only speech.

Sossin (1993) reported that children with disabilities have excessive Neutral Flow resulting from atypical ranges of feelings from safety/danger and comfort/discomfort. This corresponds with the muted Shape Flow adjustment seen in the response of caregivers and researchers to children with DS in the Strange Situation (Vaughn et al., 1994). The researchers also observed that children with DS are not picked up and held by either the mother or the stranger to the extent seen for children without DS in the Strange Situation (Vaughn et al., 1994). Together these studies support Sossin’s (1993) suggestion that the caregiver of a child with a disability needs to do substantially more of the adjusting in Shape Flow (System II) in the dyad and that working with the constricted Rhythms (System I) observed by Sossin may support emotional regulation in addition to self-agency.

Application of the KMP in working with Down syndrome

As a movement observational tool, the KMP does not require verbal interaction and can be used in natural environments with populations of all ages and development (Loman & Merman, 1996). This seems like a good
assessment choice when considering the delayed expressive language develop-
ment and limited vocabulary of children with DS (Abbeduto et al., 2001).

The KMP may be used to assess developmental progress, learning styles, 
personality characteristics, and relational styles. After the initial assessment it 
can be used to create developmental treatment plans that include both verbal 
and nonverbal (multi-modal) relational skills and to focus on areas where gaps 
in development may have occurred. The rhythm of the nonverbal commu-
nication can be adjusted by the therapist to support children who may have 
ataypical timing of social and emotional interactions, including nonverbal 
sequences, in support of developing attunement and resonance. Additionally, it 
can also be used to increase the child’s range of strategies when faced with a 
frustrating task or situation.

In addition to assessing a child’s developmental movement patterns, the 
KMP can also be used to assess the interactions between the child and her 
parents (Sossin, 2007). Studies looking at emotional, vocal, and Shaping 
attunement between caregivers and their children with DS show that the 
caregivers face additional challenges to provide appropriate attunement due to 
the inability of the child to pick up on the nuances of social communication 
(Berger & Cunningham, 1983, 1986; Wishart, Cebula et al., 2007).

Discussion of a pilot case study
A quasi-experimental pilot study, using an embedded-multiple case design, was 
conducted to explore the use of the KMP when working with the nonverbal 
social skills of a child with DS. The study participants were 6-year-old fraternal 
twins; Sasha was a child with DS and Sara was a typically developing child. 
Due to the importance of considering the whole child during the assessment 
phase, a triangulation approach using a quantitative assessment tool, a 
qualitative assessment tool, and a naturalistic observation of the children in 
their home environment was chosen.

The KMP was chosen as a qualitative assessment tool due to its focus on 
nonverbal communication using naturalistic observation of movement. 
Because the KMP provides information about developmental phases and 
relational development, it seems well suited as an assessment tool for children 
with DS. The children were videotaped for 20 minutes playing in their backyard 
and for 23 minutes of quiet play indoors. KMP profiles were developed for 
each child from the videotape.

The Vineland Adaptive Behavior Scales, Second Edition (Vineland-II) was 
chosen as a quantitative assessment tool due to its history as a tool for assessing 
children with developmental disabilities and its reliability and validity 
(Sparrow, Cicchetti, & Balla, 1984). The Vineland-II is a quantitative objective 
assessment test for people from birth to age 90. It assesses the Communication, 
Daily Living, Socialisation, and Motor skills via information gathered from 
interviews with the parent/caregiver (from birth to age 90), and/or teacher (for 
ages 3–21). The Vineland II survey addition was used to interview the twins’
mother over the phone. The classroom interview with the twins’ teacher was not used.

**Preliminary findings**

The Vineland-II results showed Sara scoring higher than Sasha on the all domains and subdomains. These scores indicated that Sara’s adaptive behaviour in personal sufficiency, social sufficiency, and motor skills was greater than Sasha’s. These results would be expected when comparing a child developing typically with a child with DS.

The KMP Body Attitudes showed the different ways Sasha and Sara interacted with the environment. Sasha’s breath appeared shallow at times, while Sara’s breath appeared balanced and initiated from her belly. While Sara initiated movement from her core, Sasha initiated movement from her extremities. Sasha used more Homo-Lateral movements than Cross or Contra-Lateral movements when walking; and Sara displayed appropriate levels of eye contact, physical contact, and boundaries.

Overall, Sara’s diagram (see Appendix 2) indicated a playful personality, even temperament, learning by shifting focus, an ability to focus and problem solve, feelings of contentment in her environment, the ability to initiate interactions and anticipate consequences, and skills at making connections with other people.

Sasha’s diagram (see Appendix 1) indicated a tendency for a playful personality, an excitable temperament, learning by sudden insight, using general attentiveness and alertness to changes for problem solving and coping, some discomfort in her feelings about herself, a style of testing and anticipating when relating to other people, and using a closed manner to relate to others through confronting and demanding.

Sasha used Neutral Flow 19% of the time, which is greater than Sara’s use of Neutral Flow 17% of the time. Both Sara’s and Sasha’s use of Neutral Flow fall near the normal range of 18–30% for Neutral Flow. Sasha’s higher use of Neutral Flow was observed in her frequent breaks from play, which increased in frequency and duration as the observation continued. Sasha took these breaks while Sara continued to play. Sasha’s higher level of Neutral Flow in Low Intensity and Graduality corresponded with descriptions of children with DS as having a level of passivity and slowness when interacting with objects, people, and the environment (Linn et al., 2000; Mundy et al., 1988). It also corresponded with Sossin’s (1993) observations that children with disabilities have excessive Neutral Flow resulting from atypical ranges of feelings from safety/danger and comfort/discomfort.

In her Tension Flow Attributes, reflective of affect, temperament, and feelings of safety/danger, Sasha is animated in four of the six patterns, but uses excessive Neutral Flow in two of the patterns, Low Intensity and Graduality. In contrast, Sara is animated in all of the affective patterns.

Sasha’s preference for Pre-Efforts (32 actions) over Efforts (29 actions) indicated less maturity, the existence of more defences, and less confidence
in herself. This preference suggests that she is slightly more regressed and defended in her environment. Her preference for Pre-Efforts over Efforts may also have been reflective of Wishart’s (1993) observation that children with DS go to considerable effort to avoid tasks of a difficulty level more than one step above their current developmental status. It could also correspond to Pitcairn and Wishart’s (1994) observation that ‘on difficult tasks children with DS often fail by default by refusing to engage fully in the task,’ which would be observed as a Pre-Effort, ‘rather than clearly demonstrating an inability to solve it,’ as would be observed in an Effort (p. 485). It is also possible Sasha used more Pre-Efforts, or defences, due to being observed and videotaped.

Sasha’s movements included more Shaping in Directions (32) than Shaping in Planes (29). Sara’s movements included more Shaping in Planes (49) than Shaping in Directions (32). Shaping in Directions precedes Shaping in Planes in the developmental line of System II. Sara’s greater use of Shaping in Planes than Shaping in Directions showed that she has more developed social skills than Sasha as would be expected when comparing a child without DS to a child with DS.

During the observation, the twins’ mother was observed using different types of scaffolding for Sasha and Sara. With Sara, her mother used verbal scaffolding for encouragement and direction. With Sasha, she used a combination of speech, touch, and Gesture to provide support. The mother’s use of different types of scaffolding corresponds with Berger and Cunningham’s study (1983) that showed mothers of children with DS showed a stronger tendency to use kinesthetic and tactile stimulation than mothers of children without disabilities. This is also supported by Wang et al. (2001) who found that students with DS are more responsive to classroom directions and more successful in accomplishing the task when the teacher uses a combination of speech and Gesture scaffolding. This need to combine Gesture and tactile support with speech for children with DS is believed to be due to their problems with auditory short-term memory (Wang et al., 2001). It can also be hypothesised that her mother is doing more of the Shape Flow adjusting with Sasha to support emotional regulation in addition to self-agency as suggested by Sossin’s (1993) observations of mothers with children with developmental disabilities.

While Sasha has achieved all of the early motor milestones of development, her movements include atypical movement patterns. While she is able to swing, climb, run, and kick, she uses more Homo-Lateral than Cross or Contra-Lateral movement when running; and she does not perform the more complex motor skills of batting and jumping rope that Sara does. This may be due to perceptual motor coupling deficits observed in children with DS by Virji-Babul et al. (2006) and the lack of fluency observed in the movements of children with DS by Jobling et al. (2006). The tendency of children with DS to treat movement sequence as a series of separate tasks (Jobling et al., 2006) was also observed when Sasha was jumping rope. She broke the sequence of jumping rope down into separate tasks (i.e. swinging the rope to the ground, stopping, jumping over, and then repeating) using slower movements that lacked fluency when compared to her sister’s sequenced movements when jumping rope.
Treatment plan

A movement based intervention programme based on Sasha’s KMP would focus initially on meeting her in her preferred or dominant movement patterns, specifically Tension Flow Rhythms and Tension Flow Attributes. In rhythms, her dominant patterns are Sucking, Biting, Twisting, Swaying, and Jumping Rhythms, and in Attributes, her preferred patterns are High Intensity and Abruptness. Joining her in these patterns allows the therapist to meet her where she’s at developmentally and facilitates establishing an empathic connection.

During the times Sasha pulls away to recharge, in Low Intensity, Graduality, and Neutral Flow, the therapist could hum in Low Intensity and Graduality to introduce a low level of animation and a gradual awakening. Sitting near Sasha, humming and quietly acknowledging verbally, her need to pull away at times. As the therapist sits with Sasha, she can notice and support the readiness to transition from quiet and Neutral Flow, the therapist could hum in Low Intensity and Graduality, having a big cushion in the room would offer an inviting space for Sasha to land and recharge. Over time, the therapist could mindfully work with Sasha on the polarities of being active and then going to soft places to recharge.

Additional ways the therapist could support Sasha’s Neutral Flow in Low Intensity and Graduality is by creating a calm and quiet environment and doing slow activities such as moving or singing slowly to affirm and honour her need to pull away at times. As the therapist sits with Sasha, she can notice and support her readiness to transition from quiet and Neutral Flow to move from the Horizontal Plane (lying on the cushion) to being done in the Vertical Plane (leaning into a wall or prop before standing on her own and then eventually into relationship by leaning into the therapist and moving out into the sagittal plane toward a favoured activity). Over time, the therapist could model and encourage the development of her Vehemence/Straining Pre-effort into a full Effort element, whether that be Light Weight Effort or Strong Weight Effort.

Finally, inviting Sasha’s sister, Sara, mother, and father into sessions might be a way to support and develop their relationship with Sasha and support the transfer of her new skills into other environments.

Implications

In DS the genetic influence of having an extra 21 chromosome is significant; however, development is the result of a complex interaction between a child’s genetic inheritance and the environment (Wishart, 1993). Working with the child’s movement capitalises on the strengths of visual memory, visual imitation, receptive language, and nonverbal communication in the emerging phenotype of children with DS (Fidler, 2005). Due to its focus on Body, Movement and Dance in Psychotherapy

Downloaded by [Ryan Kennedy] at 00:07 21 November 2012
developmental movement, the KMP seems well suited to support the
development of both the quality of movement and the social-emotional
intelligence in the emerging phenotype. Finally, application of the KMP to
prevent, or amend, disruption in the holding environment between a caregiver
and a child with DS may prevent further exacerbation of the child’s delays
caused by DS due to misattunement in the dyad (Sossin, 1993, 2007).

Acknowledgements
Special thanks to Beth Bennett, PhD, Licensed Clinical Psychologist, Licensed School
Psychologist, for completing the Vineland-II assessments.

Note
1. Terms associated with the Kestenberg Movement Profile (KMP) and Laban
Movement Analysis (LMA) have been capitalized throughout the text so as to
distinguish them from their general usage counterparts.

Notes on contributors
Keta R. Gass received her MA in Somatic Counseling Psychology with a concentration
in Body Psychotherapy from Naropa University in Boulder, Colorado, USA. She works
as a body psychotherapist at Noeticus Counseling Center and Training Institute in
Denver, Colorado, USA.

J. Ryan Kennedy has a doctoral degree in clinical psychology and a master’s degree in
somatic counseling psychology. He is an associate professor at Naropa University in
Boulder, Colorado, USA, and served as chair of the Somatic Counseling Psychology
Department. Additionally, he is the executive director at Noeticus Counseling Center
and Training Institute in Denver, Colorado, USA, and is a Licensed Professional
Counselor, a Licensed Marriage and Family Therapist, a Board Certified Dance/
Movement Therapist, and Certified Laban/Bartenieff Movement Analyst.

Suzanne Hastie is a Dance/Movement Therapist, Licensed Professional Counselor, and
Kestenberg Movement Profile (KMP) analyst. She interned with Judith Kestenberg,
MD, at her Center for Parents and Children in NY in the late 1980s and has been
integrating the KMP into her work with children, adolescents, women, families, and the
elderly since 1989. Suzanne offers consultation and teaches courses on the KMP
(www.kestenbergmovementprofile.org).

Heidi McCardell Wentworth is a Dance/Movement Therapist at Timberline Knolls
Residential Treatment Center. She works with mood disorders, drug/alcohol addiction,
eating disorders, marriage and family issues, and other women’s issues. Heidi is also a
Kestenberg Movement Profile Analyst. Using the KMP, she teaches nonverbal
communication skills to help people better understand themselves and others in the
areas such as personality, feelings, coping mechanisms, and social skills.

References
Cawthon, S. (2001). The linguistic and cognitive profile of Down syndrome:
Evidence from a comparison with fragile X syndrome. Down Syndrome Research
and Practice, 7, 9–15.


Appendix 1. Kestenberg Movement Profile for Sasha

K.R. Gass et al.
Appendix 2. Kestenberg Movement Profile for Sara

<table>
<thead>
<tr>
<th>Tension Flow Rhythms</th>
<th>Body Attitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>174 : 50 : 70 : 120 : 120</td>
<td>widening</td>
</tr>
<tr>
<td>173 : 50 : 70 : 120 : 120</td>
<td>shortening</td>
</tr>
<tr>
<td>512 : 285 : 282 : 54.3 : 21.7</td>
<td>bulging</td>
</tr>
<tr>
<td>1 : F(P) : 1.1 : 1</td>
<td>hollowing</td>
</tr>
<tr>
<td>1 : F(M) : 3.9</td>
<td>lateral widening</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tension Flow Attributes</th>
<th>Bipolar Shape Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td># Actions = 53.4% (N)</td>
<td>Gain : Expense = 1.4 : 1</td>
</tr>
<tr>
<td>Load Factor = 52% (N)</td>
<td>Grow : Shrink = 1 : 1</td>
</tr>
<tr>
<td>Free : Bound = 1 : 1</td>
<td>narrowing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procurers of Effort</th>
<th>Shaping in Directions</th>
</tr>
</thead>
<tbody>
<tr>
<td># Actions = 52</td>
<td>Load Factor = 47%</td>
</tr>
<tr>
<td>Gain : Expense = 1.4 : 1</td>
<td></td>
</tr>
<tr>
<td>Free : Bound = 1.2</td>
<td>sideways</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effort</th>
<th>Shaping in Planes</th>
</tr>
</thead>
<tbody>
<tr>
<td># Actions = 52</td>
<td>Load Factor = 47%</td>
</tr>
<tr>
<td>Load Factor = 55%</td>
<td>Gain : Expense = 1.4 : 1</td>
</tr>
<tr>
<td>Free : Bound = 1.2</td>
<td>advancing</td>
</tr>
</tbody>
</table>

Havi Weisweiler, MA, LPC, KGC, DM-H
(kgp data forms pp 19-22)