2018 GUIDE TO THE

MOVEMENT PSYCHODIAGNOSTIC INVENTORY (MPI)

by Martha Davis, Ph.D.
About the Guide

This is a revised edition of my 1997 *Guide to Movement Analysis Methods: Part 2 Movement Diagnostic Inventory (MPI)*. It was written for researchers and clinicians who have completed courses in the MPI and want information on new developments in coding and application. It was also written for social science and health professionals and students who are interested in learning about the MPI. This Guide has a great deal of new information and features, including exercises for honing one's observation skills and case illustrations of the different ways the MPI can be used in research and clinical practice.

While this Guide is now the most detailed presentation of the MPI, formal training is necessary for accurate coding. For information about MPI workshop training, contact me at madavis95@aol.com. To obtain free digital copies of some of the MPI-related articles, register at the University of Maryland Library https://www.lib.umd.edu/mspal and follow the links to the Special Collections Performing Arts Library. A list of my papers and publications on movement behavior can be found at https://www.lib.umd.edu/binaries/content/assets/public/scpa/martha-davis-fa.pdf. The MPI is a work in progress. I welcome questions and look forward to more MPI research and development.

I am very grateful to those who have taught and applied the MPI over the years, most especially Miriam R. Berger, Dianne Dulicai, Robyn F. Cruz, Hedda Lausberg, and Sherry Goodill.

Martha Davis

To the memory of my gifted colleague and dear friend, Dianne Dulical.
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INTRODUCTION

For many decades, the description of motor signs of psychopathology has been inadequate. In psychiatric references such as the Diagnostic and Statistical Manual of Mental Disorders (DSM), movement signs are not mentioned at all for many conditions. For others they are either obvious (e.g., “catatonia”) or they are not sufficiently defined and operationalized (e.g. “diminished emotional expression”). The Movement Psychodiagnostic Inventory (MPI) was developed in response to this problem. It is a reliable coding instrument based on the following assumptions. First, the study of motor signs of psychopathology requires far more precise and detailed assessment in movement terms if it is to contribute to research advances and diagnostic reliability. Secondly, with modern treatments, many mentally ill patients do not display the obvious and extreme motor behaviors cited since the 19th century, but they may show subtle signs that require training to see. Finally, microanalytic study of nonverbal behavior has demonstrated that body movement can be a very sensitive indicator of cognitive processes and changes in clinical state (cf Davis & Hadiks, 1990, Lausberg, 2013). Analysis of movement behavior has great potential for research and treatment of mental disorders, but only if it employs more rigorous operationalized terms and reliable methods for recording fine-grained details of movement.

The observations that led to the first version of the MPI were made during the early 1960’s while I was assisting Irmgard Bartenieff, a dancer, physical therapist and expert in the movement notation systems of choreographer, Rudolf Laban (Bartenieff with Lewis, 1981). Irmgard Bartenieff was the first dance/movement therapist of an innovative psychiatric day treatment center affiliated with the Albert Einstein College of Medicine in the Bronx, New York. Her position included the study of body language patterns in patients and therapists during therapy sessions. I studied Laban Movement Analysis (LMA) with Irmgard Bartenieff and assisted her for three years before attending graduate school in clinical psychology.

During these years I immersed myself in the burgeoning literature on nonverbal communication (Davis, 1972), while focussing my research on a challenging question. What in the body movement of psychiatric in-patients made them “look” like patients, even when there were no obvious motor signs such as catatonia? I began to list and define the various forms of motor disorder that we observed in psychiatric in-patients, operationalizing each pattern in movement terms largely adapted from Laban Movement Analysis (LMA). Since the first version of the coding in 1968, I have been involved in MPI studies of over 75 patients in hospital and out-patient treatment centers (Berger, 2001; Berger & Cruz, 1998; Cruz, 1998, Davis, 1970, 1975, 1985, 1991, 2014; Davis et al, 1995, 2007). The formal diagnoses of these patients ranged from Chronic Undifferentiated Schizophrenia to Narcissistic Personality Disorder. Because movement is the medium of intervention in dance/movement therapy and observation skills are so important for their clinical work, dance/movement therapists in particular have studied the MPI and contributed to MPI research (e.g., Nichols, 1985).

Initially, the most seriously disordered patterns listed in the MPI were hypothesized to be pathognomonic of specific forms of schizophrenia. While the MPI can be a sensitive indicator of the severity of the mental illness and its progress, a one to one correspondence between sign and diagnosis is simplistic and inaccurate (Cruz, 1995; Davis et al, 2007). Multidimensional assessments of MPI data indicate complex relationships between the patterns identified in the MPI and a wide range of psychiatric problems. Given the need for more validation studies and the ethical and clinical implications of analyzing body movement for diagnostic information, the MPI must be used with caution. Coding accuracy requires observation training and rigorous efforts to reach and maintain good levels of reliability. And the most important rule of the MPI is: Code conservatively.

1Dr. Israel Zwerling, the director of the two hospitals where we worked in the 1960’s, urged us to avoid traditional psychoanalytic and psychological terms and focus on what was visible in movement terms. Dr. Zwerling was also a major supporter of the creative arts therapies and their clinical and research potential. I could not have completed fifty years of movement analysis research without the inspiration and support of these two remarkable mentors, Irmgard Bartenieff and Israel Zwerling.
The MPI was originally designed for assessment of patients in verbal therapy sessions or psychiatric intake interviews, but it has been updated for application to dance/movement therapy sessions in this Guide. It is possible to identify at least some of the patterns through live observation, and with training, a short form of the MPI can facilitate initial observations and clinical note-taking. However, most research applications of the MPI require video recordings for repeated viewing and reliable data collection. Whether recording a verbal or a movement session, the optimal video is one that lasts at least 20 minutes, has no cuts, and is made with a camera that stays focused on the person in at least a medium shot. There are two important reasons to code the MPI with the sound turned off. First, this draws attention to movement details that usually go unnoticed. Secondly, speech can dominate perceptions of interview behavior and bias observations of the body movement, especially when one’s statements are incoherent or bizarre. Optimally, background information is withheld and the sound is off until after extensive replay and MPI coding is completed. Microanalysis of speech/motion relationships also follows this audio-off-at-first rule.

A 13-minute film entitled Symptoms in Schizophrenia appears to be one of the few documentaries in the public domain that show real hospitalized mental patients. It has no sound. Short descriptions of the patient diagnoses are described on plates, silent-film style. In the 1930’s, health professionals lacked the modern assessments we have today, and it is possible that some of these patients were suffering from a medical condition, not schizophrenia, but because the patients were not medicated in ways they could be today, it is a rare view of the motor symptoms that psychiatrists called symptoms of dementia praecox or schizophrenia in the early twentieth century. This film remains timely because terms such as “motor stereotypies,” “waxy flexibility,” “catatonic rigidity,” and “echopraxia” still appear in diagnostic manuals with little description, and it will be used in this Guide for illustration.

MPI observation training is limited to students and professionals in the behavioral sciences and mental health professions who are interested in its clinical and/or research applications. Videos for MPI training must be either in the public domain like Symptoms or have human subjects protections and releases for educational use. Given the difficulty of obtaining videos of intake interviews and therapy sessions, I am sometimes asked whether videos of actors who demonstrate the patterns can be used for training or research. They really cannot. Many MPI patterns are next to impossible for even highly trained actors to duplicate. However, trying to do the patterns oneself is helpful for MPI training and this Guide includes such exercises. The difficulty in duplicating MPI patterns can be compelling evidence of—and insight into—how these patterns differ from ordinary “clumsiness” or states of “tension” that are easy to imitate.

**MPI FORMAT AND CODING CHANGES**

Readers familiar with the 1997 MPI Guide may notice there is little change in the content of the patterns to be coded, but there are notable changes in the coding forms and procedures. The MPI is no longer divided into Part 1 Action Inventory and Part 2 Primary Categories. Part 1 has been deleted, and the restricted forms of nonverbal interaction originally listed in it are now items in a new MPI Primary Category called XI Limited Interaction. This should not produce a very different data set from

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2 [https://www.youtube.com/watch?v=86S3p6O63HM](https://www.youtube.com/watch?v=86S3p6O63HM) There are a number of video copies of this film on YouTube, most incorrectly dated as 1940. According to the U.S. National Library of Medicine, it is a film by James D. Page of the University of Rochester School of Medicine made in the 1930’s.

3 Arguably, it is ethical to use this film for illustrations and observation exercises because it is in the public domain and was clearly made for educational purposes. Also, it is very unlikely that the people in the film are identifiable or are still alive. There are YouTube videos made by people describing their psychiatric conditions, but these raise difficult authentication and ethical problems.
that collected for previous MPI studies because the disordered patterns of each part were combined for data analysis in the earlier research. While the patterns of Primary Categories I through X may be seen in diverse contexts, the patterns of new Category XI are, by definition, context specific. Consequently, there are two versions of Category XI: Limited Interaction/Verbal Session and Limited Interaction/Movement Session. The nonverbal interaction problems observed in each context are similar, while the differences in pattern definitions are shaped by the interaction conventions of a specific context. Each version of Category XI contains 8 items and Categories I - X are the same for both, therefore, each complete version is composed of 60 patterns (or “items”). Other changes in the MPI are less pronounced. Some definitions have been edited for greater clarity and there is more information on the rules for coding a pattern. The original ten Categories remain the same, except for the addition of three new patterns. Original items II#6 and II#12 of Reduced Mobility were combined into a revised item #6 because they were so similar. Reduced Mobility pattern, II#8, which was too vague and broad, now has an additional feature that sharpens it. And finally, a new item was added to VIII Exaggeration. The MPI was never regarded as a complete inventory, but rather a list of patterns that could expand with research and clinical experience.

WHAT vs HOW

Usually, the nonverbal behaviors that are easiest to see in a face-to-face interaction are simple actions for which there are common terms: sat down, crossed his legs, smiled, gesticulated, etc. In the MPI “what is done” at this level of detail is referred to as “specific actions” or simply “actions” (as opposed to “how” the action is done in patterns of movement that can vary in length and complexity). Depending on the aims of the research project, there are 6 “Types of Actions” that may be coded in the MPI: Gestures related to speech, Self-related Actions, Instrumental Actions, Head Actions, Facial Actions, and Positions. Coding Types of Actions will be discussed later. How the action is done—the precise details of the movement itself—is the primary focus of the MPI.

In Symptoms of Schizophrenia, terms like “catatonia” or “motor stereotypies” are all that is used to describe the motor signs of trouble. The difference between a “waxy flexibility” vs a “rigid” catatonia is demonstrated by the doctor who has no difficulty positioning the patients with waxy flexibility, but is unable to move those with rigid catatonia. If one has never seen people with these conditions, the labels alone do not adequately convey how they look. And while film and video is invaluable for instruction, it needs to be accompanied by detailed description and analysis. To cite another example, reading that a person “involuntarily imitated the movements of others,” does not convey the distinctive way that the woman with “echopraxia” is moving in the film. While one view of her on film is compelling, several replays and systematic analysis of exactly how she moves is illuminating. Finally, there is no explicit reference to the movement patterns of the three patients described as delusional and “conversing or arguing with imaginary individuals.” Does this mean there are no motor signs of their delusional states? If you replay these clips several times, do you see any?

Exercise 1

Upload the 14 minute video Symptoms of Schizophrenia https://www.youtube.com/watch?v=86S3p6O63HM From 00:32 to 1:33 you will see a series of clips of a man and two women.

1) In what ways are their movements similar?
2) Can you tell if the second woman is directly addressing the cameraperson toward the end of her clip or speaking to “an imaginary person”?
Focussing on what the person is doing is not enough for making the subtle distinctions in these examples. It might be enough for Question 2 of Exercise 1 if “addressing” means “talking to the camera people or referring to the camera” because she looks at and points to them (examples of “specific actions”). But it is not enough for making the more subtle, clinical distinction implicit in Question 2: Is she directly speaking to the crew or about the camera, or is she still arguing in a delusional way with imaginary people? Because the movement trouble persists throughout the clip, I would predict a qualified version of the second prediction, i.e., she is arguing in the delusional way with imaginary people throughout, while increasingly distressed about the filming and/or crew that she does not express directly. With audio, we could tell if the first part of this prediction were correct. Validating the second, an inference about her emotional state and what is exacerbating it, would be more challenging. Validating predictions and assessments is, of course, essential. A discussion of the various ways to validate findings is beyond the scope of this Guide, but examples can be found in the movement research articles listed in References.

### MPI PRIMARY CATEGORIES

Each version of the MPI Primary Coding form is composed of 60 patterns (or “items”) grouped into 11 different Categories of movement disorder or restriction\(^4\) (See Appendix A). There are many ways that movement can be disordered, including, of course, the motor disorders related to medical conditions. How these are visibly different than the MPI patterns will be discussed later. The key word in the MPI is pattern. Rather than counting individual details of movement element by element (e.g, “change of direction,” “sudden,” bilateral), the MPI observer scans for the distinctive way certain features of a movement are combined and sequenced. Tallying up specific actions or single features of movement is far less effective for studying “trouble” or disorder in movement behavior. Moreover, describing how an action is performed using common adjectives and adverbs like “rigid,” “tense” or “impulsive” is insufficient. The MPI is based on the assumption that a very fine-grained and comprehensive method of analyzing and recording movement is necessary for reliable coding in part because common adjectives and adverbs are too ambiguous and vague. While some Laban Movement Analysis (LMA) terms used in the description of MPI patterns are common adjectives (e.g., the slow, quick, indirect,

\(^4\) The verbal context will be the focus in the discussion of MPI Primary Categories as this is the context studied the most with the MPI. However, the rules, definitions and procedures for completing the MPI Primary Categories I - X apply equally to coding a movement session. Conversely, the movement session context is the focus of the MPI Short Form discussion, but can also be used for the verbal context.
direct, light and strong elements of “dynamics”), each has a very specific meaning, and learning this is part of the observation training. A formal course in LMA, such as those provided by the Laban/Bartenieff Institute of Movement Studies (LIMS), can help, but it is not required. MPI workshops include instruction in the LMA concepts that are incorporated into MPI coding.

The 60 MPI patterns have been identified and defined through clinical experience and systematic observation of the many ways that movement can be distorted, constricted, or disorganized. They were not identified from research with large samples. In some cases a pattern was included because it was seen in only one or two psychiatric patients. The inventory of patterns was never assumed to be exhaustive and it is very possible that additional patterns will be identified. The 60 items in the two versions of the MPI were grouped phenomenologically into eleven “Primary Categories” based on shared features. However, research and statistical analyses supports the relative independence of these categories (Cruz et al, 1995). As discussed, the MPI has been applied to studies of a fairly wide range of in-patients and out-patients, and multidimensional analyses of the data support the clinical evidence that MPI patterns are related in complex ways to psychiatric diagnoses and clinical states.

The following are short descriptions of the MPI Primary Categories. The complete MPI Coding form can be found in Appendix A. Note that the patterns of Categories I through X may be seen in both verbal contexts such as intake interviews and in dance/movement therapy sessions. As discussed, there are two versions of Category XI, one for verbal context and the other for movement sessions.

I Disorganization

“Disorganized movement” is sometimes listed as a motor symptom in diagnostic manuals, but without more explicit description. MPI Category I shows there are at least twelve ways movement can be disorganized, disrupted or “broken up” in ways more serious than what might be called “jerky” or “clumsy.” In addition, the patterns within a Category differ further in severity and in the MPI two levels are identified: “serious” and “minor”. This distinction is very important in the MPI. In each Category the serious patterns are listed first and identified by either an asterisk or the term “Serious” and the group of less disordered patterns are identified by no asterisk or the term “Minor.” For example, the first seven items of Category I are Serious types of disorganization, the remaining five are Minor (but are still more disordered than common and innocuous ways that movements can look “jerky,” “clumsy” or “uncoordinated”). Originally, the items were divided between Serious and Minor based on their visible properties and clinical experience. Later research supported keeping Serious and Minor patterns distinguished (Cruz, 1995). There is also a practical test of the difference. Minor patterns are relatively easy for one to reproduce or demonstrate, while many Serious patterns (e.g. item 4 of disorganization) are virtually impossible to intentionally perform.

Exercise 3

Try to make a series of gestures with both hands that are at no point bilaterally coordinated, i.e., the hands do not change direction at the same time (# 7 of I Disorganization). Then try to make a series of gestures that are segmented throughout, i.e., the hand(s) move in a direction, slightly pause, move in another direction, pause, and so on in a series of single (straight or arced) strokes in the air “broken” by barely perceptible pauses. (#10 of I Disorganization). Which is easier to do?
II Reduced Mobility

The forms of body constriction and restricted mobility listed in this Category are more than “tense” or “inexpressive.” Someone being interviewed can appear to be still for periods of time, while actually making small moves and adjustments that are visible on closer look. Interactions, particularly extended conversations, usually involve some head and facial movement, gesticulations with speech, and moments when the torso and/or limb(s) change position. Low mobility here refers to extremes of holding or inactivity in various parts of the body. Category II is composed of 12 different types of reduced mobility, 5 of them Serious. Note that a person can be very active in the sense of constantly fidgeting or even pacing the floor and still be highly constricted in a part of the body during the activity.

III Low Intensity

Although the changes may be subtle, people often vary the intensity of their movements, gesturing with strong emphasis or slowly turning the head. Birdwhistell (1970), one of the major researchers in nonverbal behavior, called variations in movement intensity “parakinesics.” In Laban Analysis, movement dynamics are called “effort” qualities (after the German term “antreib” meaning “drive”) and are analogous in some ways to music dynamics (forte, piano, presto, etc.). In LMA moments of sudden, sustained, light, strong, direct or indirect movement can occur singly or in combinations and sequences. In Category III Low Intensity, the complete absence of any of the movement qualities during an interview or therapy session lasting at least 20 minutes is coded as a Serious pattern.

IV Low Spatial Complexity

Ordinarily, movements display some spatial complexity and projection into space in straight or curved paths and distinct directions and planes, even if for only some of an action. In Category IV, if the person’s movements throughout an interaction of 20 minutes or longer are completely lacking in spatial complexity and projection, this is coded as a Serious deficit. There may be movement, but it appears as vague in and out changes with no moments of clear projection into space.

V Perseveration/Fixed-Invariant

Movements are often repetitive, especially gesticulations or self-related actions like fidgeting. People may tap a foot for a while or gesticulate with a series of up/down moves. While the repetitions may look the same, on closer look, subtle variations in intensity, magnitude, emphasis, or timing of the repeats are perceptible. Category V is composed of four patterns, three of which involve a special type of repetition: precise duplication of the movement size, intensity, spatial path and body part involved. This is somewhat analogous to speech perseveration, but in the MPI, the pattern receives a Category V coding only if each repetition is duplicated in every respect.

VI Flaccidity or Motor Slowness

These two different forms of movement were placed in the same Category because of initial evidence they were related to similar clinical states. “Flaccidity” is not simply loose or floppy movement, but an extreme form of giving into the weight of the body or body part. The movement or position appears to be without “tonus” or a degree of activation and aliveness. The second form refers to movements that are continuously slow (in the LMA sense of sustained/slow) or are performed without any moments of acceleration such that the person's actions take a long time to complete.
VII Diffusion

The four patterns of Category VII refer to ways that the movement can be vague, formless, and without distinct beginnings and endings. In the spatial form of diffusion, distinct directions or paths cannot be discerned. In dynamic diffusion the intensity runs on and on without crescendoes or decrescendos in emphasis in a “scattershot” way. This category also includes diffuse overlapping in which the person starts a new action before ending the previous one in a series of overlapping actions. Diffusion is to be distinguished from Category IV which also involves a lack of spatial projection but is marked by simple reversals in and out and more distinct starts and stops.

VIII Exaggeration

In one of the four forms of Exaggeration, the limb(s) move with large, full extensions throughout with no modulation or decrease in the extension for the entire phrase. In another form of Exaggeration, the actions appear overly intense, dramatic or bizarre in form. The exaggeration of these movements is greater than expressions or actions that are overdone for comic, dramatic or sarcastic effect.

IX Hyperkinesis

Hyperkinesis implies “more movements” but there are many ways that motor activity may increase. In one medical definition, “hyperkinesis” is defined as “abnormally increased and sometimes uncontrollable activity or muscular movements.” MPI Category IX lists three different ways the movement may be “abnormally increased,” but whether the pattern is uncontrollable is not a criteria for coding. There is another difference as well. MPI hyperkinesis patterns may occur for only a limited period during the session, while the medical definition implies a protracted state or condition.

X Even Control/Suspension

In the most extreme form of Even Control/Suspension, the person’s movement has a weightless, unvarying, suspended-in-space quality, with no moments of release, giving into gravity, or what is called in LMA “free flow.” In less extreme cases a high degree of bound tension is maintained throughout the movement phrase even when there are dynamic variations such as sudden, strong, or light moments.

XI Limited Interaction

Category XI refers to notable restrictions in nonverbal behaviors that reflect and facilitate participation in verbal or movement interactions. Face-to-face interactions usually involve some degree of orienting ones body and facing toward the other, nonverbal signs that indicate “I am listening” (e.g., small head nods) or “I am actively involved” (e.g., a few small head and hand movements underscoring ones speech.) For example, if throughout a verbal interview, the person displays no head nods while listening, this is coded as a Serious limit (item XI #3). Slight head-nodding while one listens usually goes unnoticed — until it is absent. Note that the signs of participation and interconnection during a conversation or interview differ in some ways from those of nonverbal interactions such as dance/movement therapy sessions, so there are two versions of XI: one for Verbal Contexts and one for Movement Sessions.

Exercise 4

Find a partner for this exercise and agree on a topic of conversation. While you speak and listen, keep your head absolutely still at all times. See how long you can go before you make slight head movements and/or your partner notices what you are doing.
DEFINING UNITS

The definitions of each of the MPI patterns contain information about its elements, movement features and boundaries, and each term of a definition has very specific and technical meaning. In the example below, the pattern from VIII Exaggeration is limited to one type of action: upper limb gestures that accompany speaking and in some way underscore and elaborate on it. These are also called gesticulations in the MPI. In the example below, one feature of the person’s gesticulations refers to their “size” or extensiveness, i.e. arms “remain fully extended and away from the body.” The question then becomes what “unit” of gesticulation is being considered here. Any and all gesticulations in the session? Segments lasting a specific duration? Or, as in this case, a “phrase” which would be the gesticulation of the arms between two rest positions. The terms “fully” and “throughout” specify it further. The arm(s) must be in full “reach” for the *entire* phrase. This may seem a trivial requirement, but gesticulations of the upper limb(s) can often involve “full reach or extension” away from the torso. However, a series of “full reach” movements *through* the entire phrase is unusual. To appreciate how distinctive this pattern is, view the man at the window in the *Symptoms* film (at time 00:55 and at 1:01). Strictly speaking, only the gesture phrase starting at 00:55 shows full extension throughout and so would count toward VIII#2, but it is a very short phrase. In the example starting at 1:01, his arm remains fully extended only during the second and longer segment. In other words, it does not meet the criteria of occurring *throughout* the entire phrase. However, the second segment is a good example of how one can gesticulate with the whole arm and hand staying extended.

Frequency is defined in an MPI pattern as the number of *repeats within* either a phrase or a specific action OR the minimum number of *occurrences* of the pattern for it to be coded. In item VIII#2 “3+ phrases” means 3 or more occurrences of the gesture pattern are required for coding and they do not have to be consecutive. The video clip is too short to see if the man in the film displays at least 3 gesture phrases of VIII#2 exaggeration. Note that the frequency or duration criteria of a pattern are based on clinical observation and a limited number of studies and could be modified with more research.

Good operational definitions require spelling out all details of the pattern and its boundaries. For most of the MPI items this means information on the features that characterize the pattern and mark its duration, frequency, and start/end boundaries. Each of the following common terms has a specific meaning and usage in MPI pattern definitions:

**Phrase** = movement between rest or settled positions. Any pause(s) “in the air” are treated as part of the phrase. The phrase may involve from one to several body parts and changes in direction and from none to many dynamic variations. Instrumental Actions, Gestures accompanying speech, and Self-related actions can be parsed into one or more phrases.

**Specific Action** or **Action**. Movements that can be described in common action terms for “what” is being done, e.g. changes position, rubs chin, gesticulates as speaks. See *Types of Actions* p. 18 and Appendix B.

**Series** or **Sequence** = 3 or more specific actions or phrases occurring consecutively.
Recurrent = 3 or more actions or movement phrases that occur at different times in the session, i.e. not consecutively.

Note that videos which cut the stream of behavior or limit the view of the whole body are problematic in part because they limit the ability to discern “natural” units defined by visible change in features of the movement. For example, in the MPI a “phrase” is a “naturally occurring” unit with its beginning and end marked by the start of the movement from a rest position and a return to the original or a new rest position, i.e., from still and settled to continuous motion to still and settled. Any pauses “in the air” are part of the phrase, not the end of one phrase and start of another. Phrases can vary from very short (e.g., a “hand toss” up and back down) to very long and intricate (e.g. multiple changes in direction, intensity and body unit.) Diverse types of activity such as position shifts, instrumental actions, and speech gesticulations can be analyzed in terms of phrases.

The duration, rate or extent of a unit required for coding varies according to the pattern and may be one of the following:

- **Moment**: brief appearance of a movement feature.
- **Segment**: part of an action or phrase that differs in notable ways from other part(s).
- **Proportion of session**: in the MPI this is specified in the definition or listed as follows: “less than half of session,” “almost all” = (90+%), or “session” (100%)
- **Rate**: number of features per seconds or minutes. The duration is an estimate of the range from the minimum duration required (“X”) for coding the item to about 10% more (“+”). This is recorded as X+ secs or X+ mins. For example, 20+ secs is a range from 20 to 22 secs.

The following are examples of the unit that is needed for the pattern to be coded:

- 1 or more very brief moment(s) during a movement phrase (e.g., #2 of Category I)
- segments of either a phrase or a specific action (e.g., #12 of I)
- a minimum duration (e.g. #3 of II)
- absence of feature per X minutes (e.g., #4 of II)
- absent entire session (e.g., #2 of III)
- present virtually entire session (e.g., #3 of X)

Some projects involve recording the onset/offset of a feature accurate to the millisecond. Coding changes in facial expression action units (AUs) frame by frame is one example (Ekman & Friesen, 1982; Bannenger-Huber & Steiner, 1986). Another is identifying the exact film frame (at 1/24 frames per second) in which a change in the direction of two body units is synchronous (cf the self-synchrony and interactional synchrony research of Condon, 1968). In MPI coding observers are not expected to record exact proportions or durations or onset times to the millisecond. That degree of accuracy requires computer coding in which the video is displayed on the screen together with an event recording program as will be discussed later. MPI coding is not accurate to a microsecond level, but it is microanalytic because of the detailed combinations of features required for coding, precise operational definitions, and the rule to code conservatively when in doubt. Finally, it is important to emphasize that MPI patterns are relatively rare. Even chronic, very disturbed patients may display just one or two patterns out of 60, albeit they may display these frequently and for periods of time.
CODING CONVENTIONS

To summarize, MPI coding involves multiple decisions and distinctions. First, the movement under consideration must meet the criteria and contain the required features and unit definers to be coded. Second, whether the pattern is designated a “Serious” form of disorder or a Minor one is very important, and the rule to code conservatively is especially important for Serious patterns. And finally, when a project calls for it, the observer may indicate when a pattern simply “meets the criteria” and when it is more extensive or prevalent than the minimum criteria. In the full MPI coding presence of the pattern is checked \( (√) \) in the box to the right of the definition. A double check \( (√√) \) indicates that the pattern is notably (>10%) more frequent or extensive than the minimum criteria required for coding it present \( (√) \).

Here is an illustration of how three items from the MPI Primary form might be coded together with a key to the symbols:

<table>
<thead>
<tr>
<th>✻</th>
<th>I#7. Bilateral Dis-synchrony: As both upper limbs move, their direction changes are unsynchronized. Min: 1-3 phrases.</th>
<th>[√] <strong>G at 2:32, 8:05</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>I#8. Spatial Contradiction: one part goes in one direction as adjacent part moves in opposite direction. Can be in- or outward rotation with opposite (out or inward) extension of limb. Min: 1-3 phrases.</td>
<td>[ ] ________________</td>
<td></td>
</tr>
<tr>
<td>✻</td>
<td>V#3. A complex action or series of different short actions exactly repeated at least once with same dynamic, spatial and body unit(s) pattern. 1-3 separate examples.</td>
<td>[√] <em>S&amp;I at 2:25, 2:42</em>_</td>
</tr>
</tbody>
</table>

\* = Serious pattern  
No asterisk = Minor pattern.
Blank [ __ ] = pattern definitely not seen.
[ ? ] = Almost or seriously considered. If ?, on the line, identify 1 or 2 patterns in question by onset time and Action Type. Comment on why the observation is not definite is optional.
[ √ ] = Definitely observed and meets criteria.
[ √√ ] = Observed pattern is notably (>10%) more extensive or frequent than the criteria or the definition.

Action Types: G = Gesticulation, S = Self-related, I = Instrumental, H = Head, F = Facial action, P = Position

In the first example, the check mark indicates presence of bilateral dis-synchrony, a form of Category I Disorganization. The second example is a minor form of I Disorganization. No checkmark indicates that it was not seen at any point in the session. The third is an example of Serious Perseveration (V#3) from the Symptoms film. The man with glasses (see 03:48 in the film) exactly repeats a complex action that contains both self-related (S) segments (rubbing chest, touching chin, touching side) and an instrumental (I) action (switching a piece of paper from one hand to the other). As discussed, in the MPI the term “actions” means “what is done.” In this case, “how” is the way that the actions are precisely duplicated. Two of his sequences are perfectly duplicated in every detail and merit a check mark √ in V#3. In other sequences he varies the speed or number of repetitions in the sequence and so these do not meet the criteria. If he were seen in a longer video doing this Perseveration pattern three or more separate times, it would be coded √√.

The initials of the Action Types in which the pattern occurred are placed in the space to the right of the coded items together with the approximate onset time. The first pattern which is hypothetical involves
gesticulations (upper limb gestures that accompany speaking) and so is labeled (G). In the third example, the pattern involved both self-related (S) and instrumental (I) actions and was recorded S&I followed by the onset times of the two actions that meet the criteria. Again, it is important to stress that MPI patterns, especially those marked Serious, are relatively rare and a display of three or more different Serious patterns is very rare. But the presence of even one Serious pattern is notable. It could indicate significant psychiatric problems, especially if it occurs frequently during a session.

The main task of the MPI observer is to decide which — if any — of the patterns are displayed. Sometimes an observer may be very undecided about whether to code a pattern despite repeated viewing. The rule is do not record it unless you are very sure and “willing to sign for it.” However, difficulty in deciding is in itself important information in the MPI. Rather than not coding it at all, the observer has the option to enter the number of the pattern (which here will be referred to as X) with a question mark. Entering X? means either “the observer strongly considered pattern X but was not sure,” or judged it “almost” because the movement fit some but not all of the criteria. An “almost” example would be a movement pattern that had the required features but fell just short of the minimum duration required for a ✓ checkmark. The option to code X? is useful for several reasons. First, it helps in the assessment of observer agreement because if Coder A checks pattern X and Coder B enters X? for the same onset time, they are considering the same pattern, but they differ in their level of confidence or judgment as to whether it meets all criteria. This is very different than Coder A saw the pattern but Coder B definitely did not. Also, the option to enter X? helps keep the coding of X (i.e., what is definitely observed) conservative and X entries are the observations subjected to data analysis. Finally, X? can be important information for clinicians monitoring progress. Movements hard to distinguish from Serious MPI patterns could indicate developing trouble. When a pattern is difficult to code, the observer is to enter a question mark in the correct space on the full MPI coding form together with the onset time.

MPI CODING SHORT FORM

Observation training and practice is essential for reaching the level of observer reliability needed for MPI research. The advanced MPI tutorial is designed for those interested in research or teaching the MPI. However, most of those enrolled in MPI intro courses are therapists interested in the MPI for observation training and clinical use. There are different ways that MPI observations can be rendered in a short form. The one presented in this Guide is good for condensing the MPI coding into a concise profile. Although the MPI Coding Short Form (Appendix C) can be used for research, it was designed especially for clinical use. In the Short Form, a part of which is illustrated below, the MPI patterns are

<table>
<thead>
<tr>
<th>Primary Categories</th>
<th>Additional Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Disorganization</td>
<td>Organization/integration: ____________________________</td>
</tr>
<tr>
<td></td>
<td>____________________________</td>
</tr>
<tr>
<td>II Reduced Mobility</td>
<td>Mobility: ____________________________</td>
</tr>
<tr>
<td></td>
<td>____________________________</td>
</tr>
</tbody>
</table>

5 In the 1997 MPI Guide, coders were instructed to insert an “A” for almost instead of “?”
coded on the left and the right side is space for a range of observations, including notable potentials.

Whether one is filling out the Short Form from observation of a video or from recall of a session, it helps to start by noting general impressions of how the person’s movements are organized and modulated, and how they range in intensity and spatial complexity. A scan of the MPI categories listed on the left helps insure that none are overlooked. Typically, a few categories can be immediately ruled out with a zero entered in the box for each. To facilitate decisions on how to code the remaining patterns, the coder review the definitions of any patterns in question (see Appendix A Coding form). If the Short Form judgments are based on live observation and recall alone, then liberal use of question marks is in order because full accurate coding usually requires multiple views. Entries of ? can also serve as reminders of what to check in subsequent sessions.

Instead of recording specific numbers in the boxes of the Short Form, presence of patterns in each Primary Category can be recorded according to this 4-point range:

- \( \varnothing \) for no MPI patterns observed,
- M for only Minor patterns observed,
- S for 1 to 3 occurrences of Serious patterns, and
- SS for a more extensive display of Serious patterns.\(^6\)

This is not an equal interval 4-point scale, but a range from none to high level operationally defined according to pattern type, “seriousness” and prevalence per Category. Note that presence of multiple Minor patterns alone would remain at the second level, below presence of just one Serious pattern because the difference between Minor and Serious is so important. With experience, transposing the individual observations into this ranking becomes relatively easy. The “Additional Observations” space on the right is for a wide set of observations and impressions, including notable strengths and potentials, because the form is designed for clinical use and note-taking.

**MPI PROFILES**

In effect, circling \( \varnothing \) M S or SS on the Short Form for each Primary Category creates a “movement disorder” profile. An MPI profile of an actual patient, JD, is shown on the next page. It shows that JD has serious disorganization, perseveration, exaggeration, hyperkinesis, and limited interaction which would indicate a great deal of disturbance according to the movement analysis. Note that he does not have high frequency levels in this half-hour session, but he does display an unusual range of Serious patterns, as well as bound, even control throughout the session (which is not designated a Serious pattern in the MPI).

I completed this MPI analysis of JD years ago (Davis 1974, 1985) by viewing the video many times without sound and before I learned more about him. The therapist can also be seen throughout this session which allowed for a study of their nonverbal interactions. This profile can be constructed from global impressions based on several viewings (as a dance/movement therapist might do for clinical assessment) OR from the detailed coding of the full MPI form transposed into a profile according to the “condensing” rules in the bottom of the Short Form. Doing a full coding and then converting it to a profile of how JD’s movement was disordered could take several hours, but a clinician with MPI training could register a great deal of what is recorded on the Short Form from even one viewing of a patient like JD because the patterns were so dramatic and apparent.

JD’s MPI profile might suggest that he is a long-time resident of a state psychiatric hospital who rarely if ever receives intensive psychotherapy. In fact, he was in extended treatment at the time and his experienced psychiatrist considered this session one of their best. The difference between JD and the

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\(^6\) SS = 4+ incidents of brief Serious patterns OR 2+ brief Serious patterns & 1+long Serious OR 2+ long Serious patterns. The criteria for condensing the observations into ratings is also printed at the bottom of the coding sheet.
patients of the 1930’s film whose conditions appear very fixed can be seen in the dramatic way that JD changes from one serious pattern to another during the session until at the end he is calmly talking with the therapist and displaying only a Minor sign of trouble in his movement. I found, as Scheflen did in his studies of therapy sessions, that a patient’s behavior can vary greatly within a session. This is especially evident in JD’s session when it is divided into natural units defined by the position shifts of both therapist and patient. JD’s profile above is based on all the MPI patterns observed during this session, but if the session is segmented by position shifts, each contains only some of the patterns and each of these combinations is a different movement profile (see next page). In effect these are movement profiles of brief clinical states.

JD is first seen waiting alone for a few minutes before the therapist enters. About halfway through, the therapist leaves to get some information and returns a few minutes later. During the two times that the JD waits alone, he constantly adjusts his position (State 1 named “Waiting” and coded Serious IX Hyperkinesis). When the therapist enters and starts the session, JD bends over, elbows on knees, his hands covering his head, and rocks very forcefully up and down with erratic breaks in the movement (State 2 Rocking/Ducking with Disorganization and Exaggeration patterns and signs of Limited Interaction: averted gaze and orientation throughout speaking and listening turns). In the midst of confusing remarks about rays bombarding his head, JD manages to convey worry that a particular

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7 In the 1960’s Albert E. Scheflen, Irmgard Bartenieff and I conferred together on microanalysis of therapy sessions. Scheflen once commented that the behavior of patients sometimes changes so dramatically in therapy sessions that if the different parts were cut into separate clips and each were shown to a different group of psychiatrists, they would inspire different diagnoses. While Scheflen discussed these behavioral units in terms of the structure of the communication system, in our research, I came to regard them as visible manifestations of clinical state changes. Scheflen’s microanalysis of family therapy sessions (Scheflen, 1985) was particularly helpful in documenting the role of position shifts in marking changes in brief alliances and topics of discussion. In JD’s therapy session, position shifts of patient and/or therapist appeared to mark the boundaries of each of his clinical states.
After the therapist returns and assures him that the nurse is not there, JD sits calmly, hands on lap until the therapist, who had kept a certain distance with his arms folded, turns toward his patient and addresses him more directly. JD immediately begins to pinch and pull at his cheek in a perseverative and exaggerated pattern as he converses with the therapist (Categories V and VIII). During this time and during the “Calm Talking” state, JD did not make head movements while speaking (XI Limited Interaction). Throughout the session JD maintained a high degree of tension and control in the flow of his movements (X#3).

The positions and levels of intensity, spatial clarity and organization of both therapist and patient were also coded without sound and the relationships between their movements indicated more about the therapeutic process (Davis, 1986). The therapist appeared to modulate his nonverbal behavior, staying low in intensity but spatially very clear when the patient was most disorganized and agitated, while carefully modulating the distance and orientation of his positions. During the severe disorganization and exaggerated rocking, hands covering head, the patient was largely incoherent, yet the therapist managed to understand what was bothering him and left to check if the nurse was observing the session. When he returned with this information, the patient responded with a few minutes of “calm

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8 Background information and audio of the session were considered after movement analysis of the video without sound.
talking.” When the therapist shifted into a closer, more vis-a-vis position, the patient began the perseverative face-pinching, but continued to speak. In the last segment when the therapist’s movements were most precise and direct, the patient stopped the face-pinching and spoke calmly, his hands resting on his lap. If observers saw only a clip of this last segment, some might say “here is a somewhat tense man talking thoughtfully with his therapist.” Given the pattern of their interaction and the progress of the patient over such a brief period, it is not hard to understand why the therapist considered this one of their best sessions.

Analysis of interaction patterns involves a “between people” focus on the sequences of moves of both people and relationships between their positions and movements. One method for systematically coding this level is described in the Guide to Movement Analysis Methods, Part 3 Nonverbal Interaction and States Analysis (NISA) (Davis, 1997). The study of JD and his therapist is an example of how the MPI analysis can be combined with methods of coding patient/therapist interactions such as NISA. This particular session was a dramatic example of how the movements of both indicated the strength of their relationship, the progress of the patient, and the experience of the therapist. Of course, not every therapy session is as dramatic and clear in movement terms as this one!

CODING TYPES OF ACTIONS IN THE VERBAL CONTEXT

In the MPI “Types of Actions” refers to six categories of nonverbal behavior that are common in face-to-face interaction: G: Gestures accompanying and underscoring speech, S: Self-related actions such as hand fidgeting or tapping a foot, I: Instrumental Actions such as pulling a chair forward; H: Head actions that underline speech or substitute for it (e.g., shaking head “no.”), F: Facial Actions, and (P) Positions. Research has demonstrated the intricate role these behaviors play in pacing and maintaining a conversation. Like the patterns of MPI XI Limited Interaction, Types of Actions are especially context-sensitive. For example, if the interview involves many “closed questions” that can be answered in one or two words, there are not likely to be many gesticulations underscoring speech. For many reasons, counting the frequency or total length of time a client spends gesticulating or fidgeting (not uncommon measures in nonverbal communication research) can be an ambiguous and misleading motor signs of psychiatric problems.

Still, there are a number of reasons to systematically observe Types of Actions for an MPI analysis. They are usually the easiest details of movement to see, and coding them for at least a part of a session is a good way to get familiar with the style and patterning of the client. Secondly, recording Types of Actions can facilitate comparisons with other studies of nonverbal communication. Thirdly, some MPI patterns are limited to a particularly Type of Action. Perhaps most important, MPI Primary patterns and Types of Actions rarely appear to be scattered randomly through a session. They tend to cluster into natural units or segments that have clear behavioral markers, such as position shifts. For example, in JD’s session, two of the four clinical states were clearly defined by what he did as well as how he did it. These were State 2: repetitive rocking (S: Self-related) in a bent over position, elbows on knees (P: Position) done with I#1 Disorganization and VIII#3 Exaggeration, and State 3: sitting up straight (P: Position) while repeatedly pinching his cheek in a very fixed pattern (S: Self-related, MPI V#2 Perseveration)

In applications of the MPI, there are at least three ways that Types of Actions may be recorded. On the MPI Primary coding form, the initial of the Action Type in which a Primary pattern occurs is entered on the line with pattern onset time. In the MPI Short Form, the Action Type can be noted in Additional Comments, particularly if it adds information on how an MPI pattern occurs. For example, if during an intake interview, the client’s movements appear seriously disorganized only during his Gesticulations with speech, but his Instrumental actions are especially well organized, this might have implications for the type of intervention. Adding occupational or music therapy which involved tools or musical instruments could support his strengths and facilitate communication. If a research project calls for
systematic coding of Actions and their frequencies, durations, or rates of occurrence, this can be done with a customized coding sheet (see Appendix C for one example) or with the NEUROGES-ELAN computer method. Recording each instance of several different types of Actions can be exhausting for coders. Recording on coding sheets is best done for shorter time intervals. The example in Appendix B is designed for coding selected two minute segments. Time sampling can break up natural units of behavior like movement phrases. One way to avoid this is to identify periods that are of particular interest and make the start of the segment the precise start of the question or comment that leads into the selection. The end of the segment is when the time interval ends. If this breaks up an action or phrase that is in progress, rules are needed for whether or how to include it. To code many sessions in full, the NEUROGES-ELAN computer method described on p. 21 is best.

INTERPRETATION OF MPI PATTERNS

The MPI is a list of 60 different ways that movement may be disordered, each pattern operationally defined in movement terms. It was designed for assessment of adults (18 and older). The degree to which the patterns may be observed in children and young adolescents remains a research question. The list does not include the classic motor symptoms of medical conditions such as Parkinsonism, multiple sclerosis, muscular dystrophy, Tourette’s and others. It also does not include signs of tardive dyskinesia and other involuntary movement patterns with known organic causes that can be assessed with instruments such as the Abnormal Involuntary Movement Scale (AIMS). While the MPI patterns appear visibly different from motor symptoms of such medical conditions, research is needed on any differences and relationships. If any of these involuntary patterns is observed, a note should be made in the comments section of the MPI.

So far, the clinical and research evidence indicates that MPI patterns are related to psychological disturbances, especially when there are multiple signs which are designated Serious. But specific patterns are not pathognomonic of specific diagnoses (Davis et al, 1995, Cruz, 1995). There appear to be complex relationships between MPI patterns and psychiatric diagnoses; connections that are better studied with multi-dimensional scaling (Cruz, 1995) and conceptualized within a psychotic.
spectrum model (Guloksuz & van Os, 2017). MPI patterns can be sensitive indicators of clinical state changes and good for monitoring clinical improvement or regression, but this has to be studied with larger samples. The research indicates that it is possible to correctly predict serious mental illness from observation of MPI patterns without information about the person and without hearing the sound. There have also been cases where people in florid psychotic states displayed no serious MPI patterns. Although in MPI studies, the number of “hits” has been significantly greater than the “misses,” much more research is needed on when the motor signs are absent; when they appear before or after the emergence of cognitive symptoms, and when they appear only once during a period of acute conflict and then disappear.

As yet there are no MPI studies that include normal controls, so the assumption that people without psychiatric problems will not display MPI patterns is as yet untested. However, I detected no MPI signs of disorder in 22 criminal suspects giving statements to Assistant District Attorneys and that study excluded anyone with serious mental illness (Davis et al, 2005). In microanalytic studies of the movement patterns of political leaders during debates and public speeches, I have seen only Minor MPI patterns in 2 of 20 political leaders (Davis, 1995). However, there was evidence of a Serious pattern in Adolf Hitler's speech behavior (Davis and Dulicai, 1995). In the midst of his 1933 inaugural address (see minute 29:56: https://www.youtube.com/watch?v=zu9aBznOlC8), Hitler tightly clamps his right hand under his left arm and the fingers of his right hand can be seen “twitching” in a random order. Hitler holds this hand down very tightly as if trying to control or cover up the finger movements the way that people with involuntary tremors may do. However, his fingers are not simply shaking, they are twitching in a random, disorganized sequence which raises the question as to whether it is an action that would be coded MPI Disorganization #4 which is Serious. In a film of Hitler made near the end of the war his hand is shaking. However, the disorganized pattern of finger-twitching visible in the 1933 speech is very different from the shaking in 1944 which resembles an involuntary, Parkinson-like tremor of the forearm, hand and fingers as a unit. The criteria for coding Disorganization (item I #4) does not preclude the possibility that such patterns are in some way involuntary. Many Serious MPI patterns may be “involuntary” in the sense that they are very hard to imitate and they appear to be beyond the client’s ability to consciously control. But whether MPI patterns are controllable is not what distinguishes them from motor disorders with medical causes. What distinguishes them at this point are subtle, but visible, differences in their patterning.

Finally, it is important to emphasize what are not MPI Primary patterns. Common nonverbal signs of nervousness or unease such as brief periods of hand-fidgeting, rapid blinking, face-rubbing, fixing ones hair, adjusting ones clothes, are not in themselves signs of serious disturbance, and should not be confused with disordered patterns of movement in the MPI sense. Also, if someone makes a series of repetitive gestures up and down while speaking, it is extremely unlikely this is an example of MPI Perseveration (V#2). It is how the action is performed that may indicate a problem. If common actions like “fidgeting” and gesticulating are done in a very restricted, exaggerated or disordered way, the MPI may be one way to identify the trouble. As discussed, involuntary motor symptoms such as tics and the spasms of tardive dyskinesia are different than disordered patterns defined in the MPI. For example, a facial tic tends to engage the same muscles and area of the face each time, while very

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9 “The concept of schizophrenia only covers the 30% poor outcome fraction of a much broader multidimensional psychotic syndrome, yet paradoxically has become the dominant prism through which everything ‘psychotic’ is observed, even affective states with mild psychosis labelled ‘ultra-high risk’ (for schizophrenia). The inability of psychiatry to frame psychosis as multidimensional syndromal variation of largely unpredictable course and outcome - within and between individuals - hampers research and recovery-oriented practice....We tentatively conclude that with the advent of broad spectrum phenotypes covering autism and addiction in DSM5, the prospect for introducing a psychosis spectrum disorder - and modernizing psychiatry - appears to be within reach.” From Abstract of Guloksuz & van Os, 2017

10 Once a patient on the psychiatric unit where I was training said to her psychiatrist something like this: “you can’t help me, Doctor. It’s my body. One part goes one way, the other goes another way by itself. I can’t help it.” This insight seemed exceptional for such a chronic and very disturbed patient. Her psychiatrist asked that in addition to their appointments, she be seen by a dance/movement therapist.
sudden, “out of the blue” movement impulses (Disorganization I#2) that break up the sequence of a person’s movement may occur in different body areas, including the face. Finally, while involuntary movements associated with medical conditions may increase in magnitude and frequency during periods of heightened stress—as MPI patterns may—they are different in subtle ways. In most cases it is easy to see the differences, even if it is challenging to put them into words. When there is any question, as in the case of Hitler's finger twitching, more examples need to be studied.

COMPUTER CODING OF THE MPI: the NEUROGES-ELAN Method

The ability to code the MPI on a computer could lead to major advances in MPI research. This has become possible thanks to the work of Dr. Hedda Lausberg. Dr. Lausberg has extensively tested and applied the NEUROGES-ELAN coding system for recording gestures and movements in diverse contexts, especially clinical interviews (Lausberg, 2013, 2018). A psychiatrist and neurologist who was originally a dance therapist, Dr. Lausberg learned the MPI during one of her research fellowships and participated in an MPI study of in-patients at Downstate Medical Center in New York City. She has completed research on movement patterns of patients with a range of psychiatric and neurological problems including patients with damage to the corpus colossum (Lausberg et al, 1996, 2007). The microanalysis of gesture in relation to speech and cognition — spurred by David McNeill's *Hand and Mind* (1992)— has become a primary focus of nonverbal communication research. Dr. Lausberg co-founded the Berlin Gesture Center and is active in organizations and conferences on gesture and speech, such as the International Society for Gesture Studies (ISGS). Recognizing the need for a computer event recording system that could facilitate this research, she developed NEUROGES-ELAN with H. Sloetjes. It has been used in studies involving more than 500 individuals (http://neuroges.neuroges-bast.info). She now directs a research lab at the German Sport University Cologne where the NEUROGES/ELAN system is used in studies of relationships between gesture patterns and cognitive, emotional and interactive processes.

In her revised version of the NEUROGES-ELAN system, Dr. Lausberg is including the capacity to code MPI Primary patterns as well as Laban Movement Analysis (LMA) coding of variations in intensity (called effort qualities). This means that with NEUROGES-ELAN training someone who is proficient in coding the MPI can view a video placed in the upper part of the computer screen and record exact onset of an MPI pattern on the keyboard. The MPI patterns can then be analyzed along with the coding of types of action, body units, laterality, and other details of movement that are systematically recorded in the NEUROGES-ELAN method (Lausberg, 2013, 2018). The research and clinical potentials of NEUROGES-ELAN combined with the MPI are very promising. Studies conducted by Dr. Lausberg and colleagues trained in NEUROGES_ELAN are demonstrating intricate ways that visible movement patterns reflect and link to brain processes.
REFERENCES


Davis, Martha (1975). Focusing beyond words: Nonverbal dimensions of therapeutic interactions. Videotape, Communications in Medicine Department, Hahnemann Hospital, Philadelphia, PA.


APPENDIX A
MPI PRIMARY CODING FORM             Client_____ Session_____ Coder_____ Date____    p1

I DISORGANIZATION

[*1.] Effort flow or force fragmentation: very erratic fluctuations or breaks in fluency and/or emphasis. 1-3 phrases.

[*2.] Very sudden impulse, as if “out” of nowhere” that may occur at any point(s) in the movement. 1-3 phrases.

[*3.] Fingers stay hyperextended throughout the action with flexion or extension at knuckles and/or wrist. 1-3 phrases

[*4.] Body fragmentation: in the movement occurs sporadically in different body parts without clear succession, connections or combinations. 1-3 phrases

[*5.] A sequence of weight shifts that is highly disorganized. (1+)

[*6.] Changes in direction of hand or head movements are unsynchronized with 1-3 phrases of repetitive action of lower limb(s).

[*7.] Bilateral Dis-synchrony: As both upper limbs move, their direction changes are unsynchronized. 1-3 phrases.

8. Spatial Contradiction: one part goes in one direction as adjacent part moves in opposite direction. Can be inward rotation with with extension, outward rotation with flexion of limb. 1-3 phrases.

9. Flow/Tension Contradiction: 1-3 actions and/or positions in which one body unit remains very bound while another is totally limp.

10. Spatial Segmentation: entire phrase is broken up with perceptible pauses between each change in direction. (3-5+)

11. Body Segmentation: as different body parts move in a sequence, the phrase is broken up with pauses between each unit change. 1-3 phrases

12. Action segmentation: two different and very short actions rapidly alternate a least 3 times, breaking the phrase into segments. e.g. rubs chin, tosses hand, rubs chin, tosses hand etc. 1-3 phrases.

Coding Conventions:
[*] = Serious pattern  No asterisk = Minor pattern.  Blank [__] = pattern definitely not seen.
Action Types:  G = Gesticulation, S = Self-related, I = Instrumental, H = Head, F = Facial action, P = Position
[?] = Almost or seriously considered. If ?, on the line, name 1 or 2 observations in question by onset time and Action Type(s) in which the pattern occurred, e.g. I#2: “Impulsive start to G at 2:13 & H move at 4:02.”
[✓✓] = Definitely observed and meets criteria. Optional: List Action Type(s) in which the pattern was observe.
[✓✓] = Observed pattern is notably (<10+%) more extensive or frequent than the frequency/duration criteria for ✓

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II REDUCED MOBILITY

✻ 1. No movement and absolutely still except for eye blinks for two minutes or longer, cf catatonic. [ ] ________________________

✻ 2. Head still through time observed. [ ] ________________________

✻ 3. Fixed shape or position held up in the air and against gravity for 30+ seconds. [ ] ________________________

✻ 4. No position shifts for 20+ minutes (includes small position changes of hand or foot, but not of head). [ ] ________________________

✻ 5. No total body activation (postural movement) in large body actions, full-reach gesticulations, torso shifts, or, if seen, standing up, sitting down and walking. [ ] ________________________

6. Low rate of postural movement: one brief moment of activation through entire body in 20+ minutes. [ ] ________________________

7. Only one or two position shifts in 20+ minutes. [ ] ________________________

8. For 10+ minutes, movements are predominantly distal (head, hands, feet) and all so tiny, it may be hard to discern action type. Add ✻ if entire session. [ ] ________________________

9. An isolated body unit is fixed/held throughout session, e.g., head tilt actively held through moves and positions. [ ] ________________________

10. Distinct facial expression held 15+ seconds. [ ] ________________________

11. Almost no movement of face apart from eyes during session. [ ] ________________________

12. Arrests specific action midway and holds for 15+ seconds. [ ] ________________________

Notes:__________________________________________________________________________________
__________________________________________________________________________________

MPI Unit Key:
Phrase = movement between rest or settled positions. May include pause(s) “in the air” which are part of the phrase. The phrase may involve one or several body units, and its length may vary from 1-2 changes in direction to many.
Series or Sequence = 3 or more specific actions or movement patterns occurring consecutively.
Recurrent = actions or movement patterns that occur at different times, i.e. not consecutively.
Proportions of session: most = 55+%, almost all = 95+%, during or throughout session = 100%
Frequency or rate of brief event or action is defined in terms of number per either specified duration or total session.
Duration = a range in secs or mins from the minimum time required to about 5% more, e.g. 15+ secs = 15 to ~ 17 seconds.
MPI PRIMARY CODING FORM

III LOW INTENSITY

1. Little variation in muscle tension/fluency (effort flow) and within neutral range throughout. Hard to see any changes.
2. No dynamic (effort) qualities (space, force, time variations) visible in movement during the session.
3. Low dynamic intensity: low rate (1 per 5+ mins.) of phrases with no more than one single effort quality per phrase.

IV LOW SPATIAL COMPLEXITY

1. No clear directionality or projections into space. Only vague outward-inward (shape flow) variations.
2. Any spatial complexity (shaping, directional, curved transitions) limited to hand/forearm gesticulations.
3. Gesticulations have only a single moment of directionality or spatial projection per phrase within vague shape flow.

V PERSEVERATION, FIXED-INVARIANT

1. One or two effort qualities repeated multiple times in an unvarying way within a phrase. 1-3 separate examples.
2. Simple repetitive movement of one body unit with pacing and intensity “monotonous.” It appears to “go by itself” unrelated to rest of movements and positions. 1-3
3. A complex action or series of different short actions exactly repeated at least once with same dynamics, spatial and body unit(s) pattern. 1-3
4. Hand/arm gestures or actions remain strictly in one spatial plane per phrase throughout the session.

VI FLACCIDITY, MOTOR SLOWING

1. Flaccid, inert, limp trunk tonus throughout session.
2. Limbs in rest positions completely limp most of session.
3. 3+ phrases of hand/arm action ending in very limp drop.
4. Motor slowing: An activity done with such slowness and absence of moments of acceleration that it takes an exceptionally long time to complete. (cf bradykinesia)
MPI PRIMARY CODING FORM

Client_____  Session_____  Coder_____  Date____

VII DIFFUSION

✻1. Spatially diffuse gesticulations and/or speech-related head movements (1-3+ phrases lasting 3+ secs). Absence of straight, rounded, or 3-D paths or transitions. (Excludes simple reversal moves\(^{11}\))

✻2. Continuous diffuse dynamic pattern through at least 3 phrases, each lasting more than 3+ secs. "Scattershot" accents and unclear phrase boundaries.

3. Series of specific actions in which each is interrupted by the next action and not completed. (1+)

4. Movements that are spatially or dynamically diffuse in only part of the phrase. (1-3+ examples lasting 3+ sec.)

VIII EXAGGERATION

✻1. More phrases of total body action and/or large limb position shifts than phrases limited to forearm/hand, head or foot for 2+ minutes while sitting.

✻2. 3+ phrases of gesticulation in which arm(s) remain fully extended and away from the body throughout the phrase.

✻3. Conventional action or expression that is very exaggerated and bizarrely executed. Describe:___________________

4. Conventional action that is overdone (repeated several times, drawn out, and/or very intense) for no apparent purpose. Describe:________________________________________

IX HYPERKINESIS

✻1. 3+ phrases of large limb and/or trunk position shifts in 15 seconds (excludes gesticulation or instrumental action).

2. 3+ phrases of peripheral limb (hands, forearms, lower leg) position shifts within 15 seconds.

3. Activity or specific action performed very rapidly either because no pauses or deceleration between phrases or because repeated instances of suddenness throughout.

\(^{11}\) Simple reversal = movements that “double-back” e.g. up/down, forward/backward, out-in either one time or in a continuous series (e.g., a “baton” or “beat” pattern)
X EVEN CONTROL/SUSPENSION

1. Movements and positions appear suspended, weightless, with no time variation; have an even, possibly light quality throughout session. [☐] __________________________

2. High degree of bound flow or muscle tension is maintained throughout almost all (95%) movement phrases. Absence of moments of free flow or release of muscle tension. [☐] __________________________

3. High degree of bound control or muscle tension actively maintained in trunk and limb positions during session. [☐] __________________________

XI LIMITED INTERACTION/VERBAL CONTEXT

1. Spends most (greater than 55%) of session doing self-related and/or instrumental actions unrelated to the activity. [☐] __________________________

2. Whenever speaking during the session, does not move head (except for changes in head orientation). [☐] __________________________

3. Never nods or shakes head while listening. [☐] __________________________

4. Speaks entire turn with head and gaze directed away from listener. (4+ speaking turns) [☐] __________________________

5. Keeps gaze and head averted while the other is speaking. (4+ turns listening). [☐] __________________________

6. No head movement underlining/embellishing speech except shakes no, nods yes, or changes in head orientation/position. [☐] __________________________

7. Displays either no speech-related gestures or only short ones (>3 changes in direction) entire session. [☐] __________________________

8. Does not actively orient body toward other. Either keeps torso/legs/arms in same orientation as chair or they orient/turn somewhat away from the other entire session. [☐] __________________________

NOTES:

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12 After MPI coding completed, verbal coder checks box if client gives only short, less than three word comments per speaking turn during the entire session. [☐]
XI LIMITED INTERACTION/MOVEMENT SESSION

※1. Does not participate in session or respond to therapist’s communications and does not watch the session beyond occasional glances while in the room.

※2. Does not participate in session and displays self-related and/or instrumental actions most (55+)% of time in room. Declines invitations to participate through eye contact, words and/or head shakes. May watch some of session. List actions:________________________

※3. Participates, but dominates the session for at least 5 minutes with movement “solo(s)” hard for others to join or relate to beyond watching. Does not modify his/her movements in relation to what others are doing.

4. While participating, eye contact with therapist and other participants is rare (less than 3 times per minute).

5. Actively avoids physical contact or close proximity to others while participating in session.

6. Participates by moving in some way that relates to the movements of others and/or to the music, but does not join the group formation(s) (circle, pairs, etc.).

7. When follows the movements of others or the group, he/she moves with less reach or extension of the arms and with smaller or less intense steps.

8. The beat or changes in direction of his/her movements and steps are mostly (55%) out of synch with the group’s.

NOTES (Additional information on client’s interactions with therapist and group, types of movements that he/she initiates, notable strengths.)

---

13 If [], cite examples with onset time and explain why it was difficult to decide or didn’t reach criteria.
APPENDIX B  Left Side

<table>
<thead>
<tr>
<th>MPI Action Coding Key</th>
<th>Coder</th>
<th>Project</th>
<th>Date</th>
</tr>
</thead>
</table>

**Gestures Related to Speech (G):** unit = phrase (from start to stop in settled position) of gesticulation

**Short or Prep^End:** 2 directions, e.g. forearm(s) raise up in start of gesture^back down _________

3+: any combination or sequence of fingers to whole arm(s) make 3 or more changes in direction____

**Shrug:** shoulder(s) up^immediately down in isolated action or during gesticulation _________

**Self-related (S):** unit = start to stop (either still in settled position or change to another type of action)

**On Body:** touching action (e.g., nose wipe, hand rubbing, fixing hair)_______

Action Label_______

**Within Body:** single or continuous within body action (e.g. rocking, swinging lower leg)_______

Action Label_______

**Instrumental (I):** action handling object that may involve one or more steps or phrases of movement

**Attached:** Start to stop handling object on the person (e.g. rolling up ones sleeve, fixing tie)_______

Action Label_______

**Separate:** handling separate object (e.g. pen)_______

Action Label_______

**Facial Actions (F):** facial expression or action (e.g., lip biting, smile or frown) only when clearly visible_______

Action Label_______

**Positions (P):** settled arrangement of torso & limbs (excluding head, hands, tiny limb or torso variations)

Onset (approximate time settled)________

Position Type (letter assigned position recorded under onset marker)________

Symbol Key and Procedures:

^ = direction reversed
/

= mark for onset of action placed on recording sheet line at or about second it occurs.

A, B, C, etc letter assigned a position (starting with the position visible at start of the segment);

Positions can be described briefly in words or drawn as stick figures in the boxes.

If the person is settled in a position at the beginning of the segment, place A under the space
to the far left indicating it was established before the segment and do not record an onset marker (/ ) above it. If a type recurs, enter its initial. If no repeats, then the number of position shifts equals the number of different positions minus 1 for the position “found in.”

**Action Label:** record 1-3 word description of specific action under its onset marker; if it

Repeats can use initials of label as a shorthand.

Enter the total of each onset marker and number of different position types in totals column.
### APPENDIX B  Right Side

<table>
<thead>
<tr>
<th>MPI Action Coding</th>
<th>Client</th>
<th>Session/date</th>
<th>2 MIN Segment</th>
<th>Coder</th>
<th>Gestures Related to Speech (G):</th>
<th>1min</th>
<th>1 1/2 min</th>
<th>2 min</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Short G</td>
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<td>3+ Gest.</td>
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<td>Shrugs</td>
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</tr>
<tr>
<td>Self-related Actions (S)</td>
<td></td>
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<td></td>
<td>S on Body</td>
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<td>S within Body</td>
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<tr>
<td>Instrumental Actions (I)</td>
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<tr>
<td>Facial Actions (F)</td>
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<td>Face Actions</td>
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<tr>
<td>Positions (P)</td>
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<td>Pos. Shifts</td>
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<td></td>
<td>Pos. Type</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Position Descriptions**

A  B  C  D  E  F  G  H  I  J

**COMMENTS:**

________________________________________________________________________
### Movement Psychodiagnostic Inventory (MPI) Coding Short Form

<table>
<thead>
<tr>
<th>Primary Categories</th>
<th>Additional Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>I Disorganization</td>
<td>Organization/integration: _________________________________</td>
</tr>
<tr>
<td>II Reduced Mobility</td>
<td>Mobility: __________________________________________________</td>
</tr>
<tr>
<td>III Low Intensity</td>
<td>Dynamic Intensity: ________________________________________</td>
</tr>
<tr>
<td>IV Low Spatial Complexity</td>
<td>Spatial Complexity: ________________</td>
</tr>
<tr>
<td>V Perseveration/Fixed/Invariant</td>
<td>Pattern Variety: ___________________________________________</td>
</tr>
<tr>
<td>VI Flaccidity/Motion Slowing</td>
<td>Strong Affect: ____________________________________________</td>
</tr>
<tr>
<td>VII Diffusion</td>
<td>Phrase Clarity/Complexity: ________________________________</td>
</tr>
<tr>
<td>VIII Exaggeration</td>
<td>Modulation in personal space, timing, activity level and/or type of action/expression: ____________________________</td>
</tr>
<tr>
<td>IX Hyperkinesis</td>
<td>________________________________________________________________</td>
</tr>
<tr>
<td>X Bound, Even Control</td>
<td>Fluency: __________________________________________________</td>
</tr>
<tr>
<td>XI Limited Interaction</td>
<td>Interaction: ______________________________________________</td>
</tr>
</tbody>
</table>

**Coding I - XI MPI Primary Categories:** If confident in the observation, enter the item number(s) in Category box OR circle one of the following:

- ☐ = no MPI pattern displayed
- M = Minor Pattern(s) only displayed
- S = 1-3 displays of brief Serious patterns or 1 display of long Serious pattern.
- SS = 4+ (or more) incidents of brief Serious patterns OR 2+ brief Serious patterns & 1+long Serious OR 2+ Serious patterns of long duration.

If not sure, but seriously considered a pattern or judged it as an “almost,” enter “?” after the item number in the box.

**ADDITIONAL OBSERVATIONS:** What is striking, noteworthy or in question beyond the MPI Primary Categories coding on the left. Examples include: positive potentials (e.g. a period when the movement is especially well-organized); nonverbal signs of withdrawal or negative affect; explanation of why a Category was difficult to code; information on whether the pattern is limited to one sub-system; implications for clinical work; information or impressions that clarify and expand on the movement observations in a clinically valuable way.

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