Prof. RIGAS, ANASTASIA-VALENTINE
MELLON, ROBERT
PANAYIOTACOPOULOS, DIMITRIS
University of Crete
Department of Psychology
Rithymno
HELLAS

TOY-BASED ASSESSMENT OF WORK-RELATED SKILLS IN MENTALLY RETARDED PERSONS WITH THE ERGO TEST HELLAS

The ERGO Test Hellas was designed to facilitate the vocational orientation and adjustment of persons with mental retardation. It is a comprehensive assessment instrument composed of a) a specially structured questionnaire for obtaining reliable observations of mentally retarded persons current work-related skills and emotional characteristics from their educators, and b) toys specially designed and constructed to provide an intensive interactive evaluation of the current emotional, social, cognitive and motor skills of these persons in the workplace environment. In accord with the needs of the individual, the test contributes to the immediate or the eventual occupational integration of mentally retarded persons. Its purpose is to strengthen the self-esteem of these special persons, socializing them through enhancement in their readiness for work. In the present introduction, the specially designed and constructed toys of the ERGO Test Hellas will be demonstrated in photographic material, illustrating its efficacious application with mentally retarded persons at a special education center in the greater Athens area.

Introduction

In our view, the ability to work is among the most important offerings that a society can make to persons with mental retardation. The ability to work enhances the quality of life, enriches self-esteem, and mitigates damaging stereotypes about persons with special needs. The needs of persons with mental retardation are best served by the assumption that they will be able to work, by a clear and objective assessment of the necessary behavioral characteristics for working, and by arranging the appropriate circumstances to help these characteristics to develop.

The recognition that the psychosocial integration of persons with mental retardation depends upon their incorporation in the workplace led to the creation of Sheltered Workshops (Papadapoulos, 2001). However, if a person with mental retardation enters the Workshop without the abilities and characteristics that are required for successful adaptation in the new environment, the experience can be traumatic—not only for the mentally retarded person who enters the Workshop before he or she is ready, but also for other persons in the Workshop who are adjusting to the new challenges of work (Haring and Lovett, 1990).

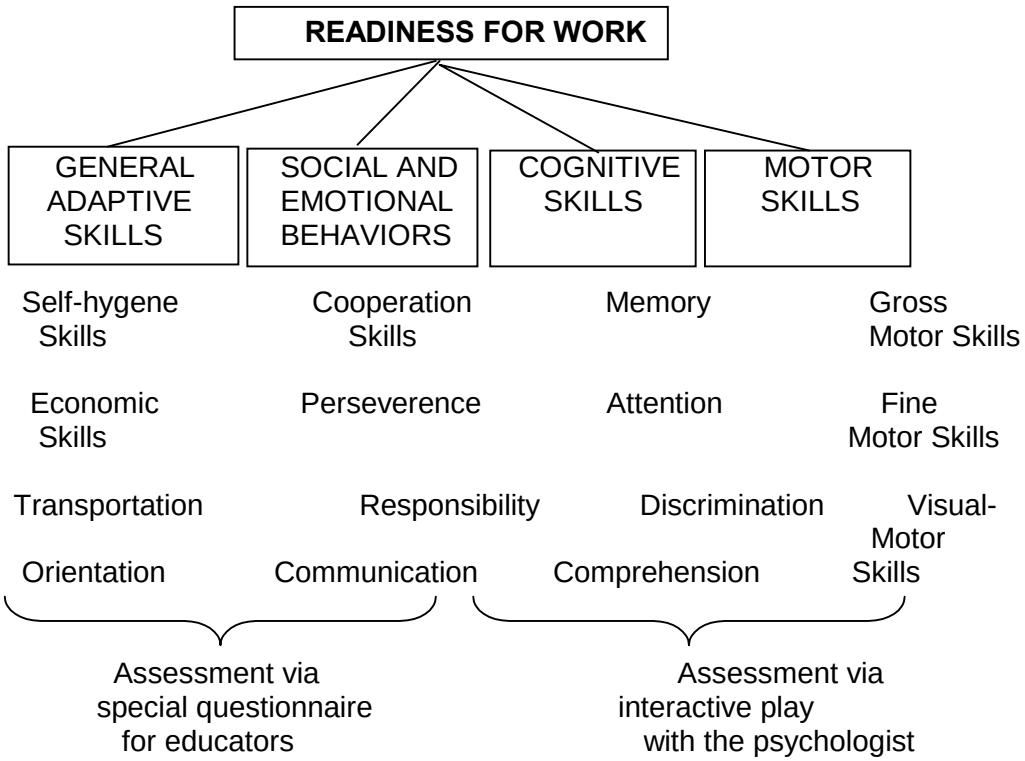
In light of these considerations, the ERGOTEST HELLAS was designed to provide 1) quantitative and qualitative index of the degree of readiness of persons with special needs for working in a sheltered workshop, 2) an index of individuals' progress towards readiness for work,

3) a device for determining specific behaviors that need to be established or further developed in order to help a person to become ready for work.

The ERGOTEST HELLAS was developed on the basis of the clinical experience of psychologists who are skilled in developing the abilities of persons with special needs, as well as on interviews with special educators, occupational therapists and social workers concerning the behavioral characteristics that need to be present for a person to successfully move from a training to a sheltered workshop environment.

What emerged was an icon of a handicapped person who was ideally suited for a successful transition from a purely educational and therapeutic environment to the more demanding environment of the sheltered workshop. In accord with recent reviews of the literature on the vocational training of the mentally retarded (e.g. Zervas, 1998; Loveland and Tunali-Kotoski, 1998; Szymanski, 1994; Wehman, 1992), our research team concluded that the essential characteristics for successful transition to the workplace environment are usefully organized and summarized as follows:

Figure 1.
The construct of Readiness for Work



Taken together, the presence of all of the characteristics of behavior summarized in Figure 1 constitute the profile and identity of a person who is “Ideally Ready for Work”. Naturally, a given person with mental retardation seldom possesses all of the characteristics of behavior that might be desirable whhen he or she begins work. Of course, this does not mean that the person’s transition from the Educational Environment to the Sheltered Workshop Environment will not be successful. Like all of us, persons with mental retardation have personal strengths

and weaknesses. It is often the case that a strength in one area might counterbalance a weakness in another area. (Zigler and Hodapp, 1986˙ 1991, Panagiotacopoulos and Rigas, 1991, Rigas, 1997˙ 1998).

Moreover, it is fully expected that the learning and development of individuals with special needs will continue in the workshop setting. For example, a person who is somewhat emotionally labile but who also has a wide range of adaptive functions may make a good initial adjustment on the basis of these skills, and as a result of his accomplishments in a supportive work environment his emotional difficulties may be mitigated. Likewise, a person with somewhat limited adaptive functions but rather high persistence and tolerence of frustration may take longer to learn his job but may be more productive than many others once he has learned it. Thus, our question is not whether an individual is *ideally* ready for work, but whether their work-related repertoire of behavior provides an adequate basis for adjustment in the more demanding sheltered workshop environment.

Quantitatively, we can phrase this question by asking whether a person has an adequate percentage of the characteristics of behavior of a person who is ideally ready for work so that the probability of a good adjustment in the sheltered workshop is high. A person who does not yet possess an adequate percentage of the ideal work-related behavioral repertoire would be better served by a program of education and therapy for the specific deficient elements of behavior than he would be by immediate entry into a sheltered workshop.

The ERGOTEST HELLAS obtains information about the readiness for work of mentally retarded persons in two major components. First, information about the range of adaptive skills, social tendencies and emotional disposition of the mentally retarded person are obtained from educators who have spent extensive amounts of time with the person in a variety of situations. This information is obtained via a two-part questionnaire or survey called the *Survey of Adaptive Skills and Social-emotional Behavior*.

In the second component of the ERGOTEST HELLAS, information about the level cognitive and motor skills that contribute to a successful transition to the work environment are obtained via interactive play between a psychologist and the person with mental retardation, utilizing specially designed games that mimic work-like situations.

The ERGOTEST HELLAS, 1st Component:
***Survey of Adaptive Skills and Social-emotional Behavior*.**

The Survey of Adaptive Skills and Social-emotional Behavior is composed of 75 thematic units or items, of which 43 concern the General Adaptive Functions of persons with mental retardation, and 32 concern their Social-emotional behavior. Examples of thematic units from each part of the survey are presented in Figure 2. For each thematic unit, there are three proposals that represent three levels of each skill or characteristic: either the skill or characteristic is *missing* from the person's repertoire, or it is *currently under development*, or it is *developed to a satisfactory level*.

Figure 2.

Examples of thematic units (items) from the
ERGOTEST HELLAS:
Survey of Adaptive Skills and Social-emotional Behavior

Example from Part A' – General Adaptive Skills:

35. ◇ Cannot use a radio or a television.
○ Can turn a radio or television on and off and can change channels, but not to find specific content (e.g., specific music programs, sporting events etc.).
□ Uses a radio or television to find or select specific types of programs.

Example from Part B' – Social-emotional Behavior

46. ◇ Does not greet others nor says 'thank you.'
○ Greets others and says 'thank you' but usually needs prompting.
□ Usually greets others and says 'thank you' without prompting.

The Survey was specially designed to be used repeatedly, and facilitates the assessment of the progress or regression of the subject for each of the 75 skills and behaviors surveyed. Simply by placing a page from the current and previous assessment side by side, it is easy for a clinician to note which specific skills and characteristics changed and which stayed the same from the time of the previous assessment. This feature of the ERGOTEST greatly facilitates the planning of education and treatment priorities and the assessment of the effectiveness of interventions.

In addition to this detailed diagnostic information, the survey provides three summary scores, which represent the percentage of ideal readiness for work in three domains: *General Adaptive Skills, Social-emotional Behaviors*, and *Overall Readiness for Work*, which represents a combination adaptive and social-emotional behavior.

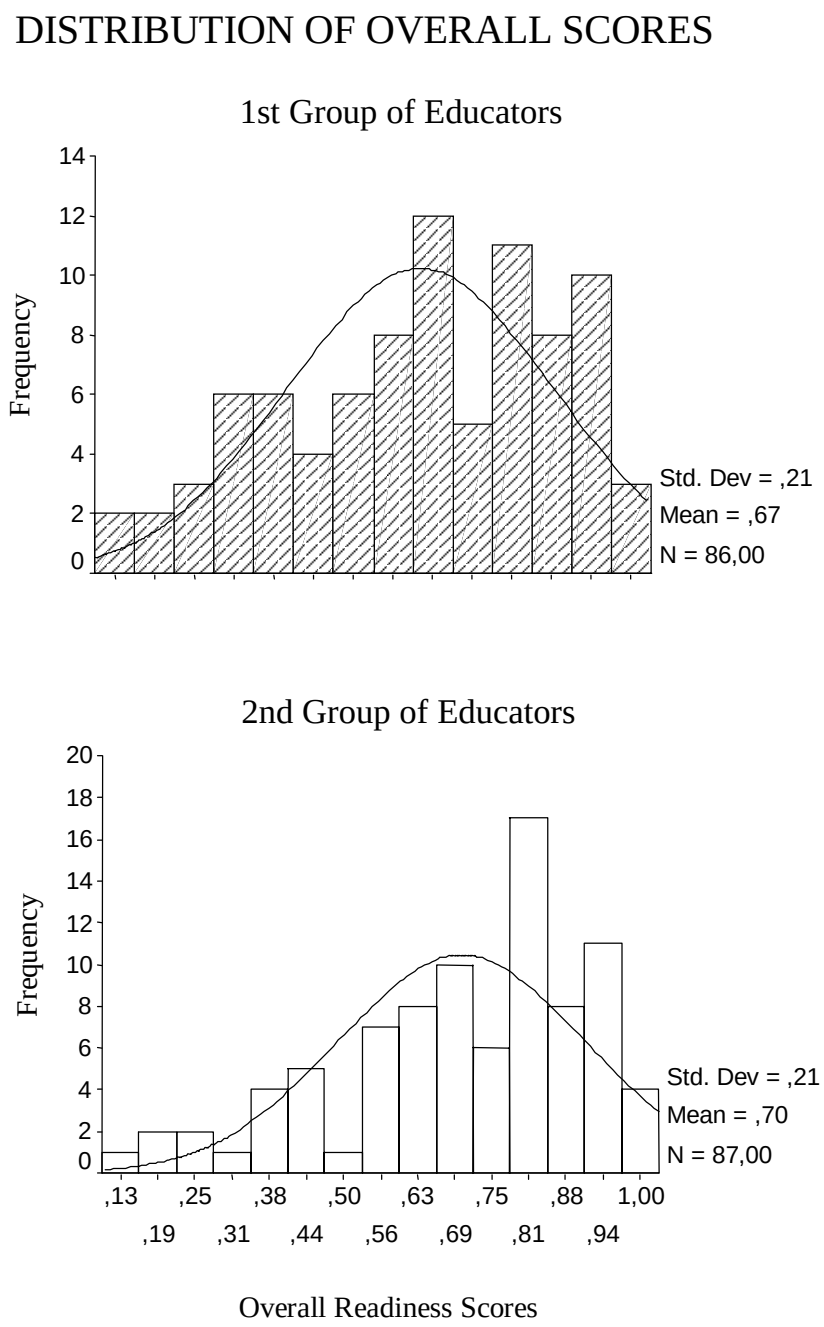
The survey has been applied in a pilot study of 87 persons with mental retardation (57 males and 30 females, at least 14 years old) at centers for persons with mental retardation in three cities on the island of Crete and in the greater Athens area (Rigas, Mellon and Panagiotacopoulos, 2001). After the collection of demographic information and family history from their individual records, *The Survey of Adaptive Skills and Social-emotional Behavior* was administered to two educators who knew each person with mental retardation well, in order to test the reliability of evaluations with different educators. In order to test the temporal stability of assessment with the survey the same educators completed identical surveys for the same individuals two weeks after the first administration.

In order to have diagnostic meaning, a test must discriminate among levels of the phenomenon it measures. In Figure 3 are presented the distributions of Overall Scores from the 87 subjects as they were assessed by

Table 1.
Means and standard deviations (in parentheseis) of summary scores on the Survey by the two groups of educators.

	Overall Scores	Adaptive Skills Scores	Social-emotional Scores
1st Group	.70 (.21)	.67 (.25)	.73 (.19)
2nd Group	.67 (.21)	.63 (.25)	.71 (.19)

Figure 3.



each of two groups of educators. From these graphs and from the standard deviations of scores presented in Table 1, we can see that the scores provided a satisfactory level of dispertion, with a roughly normal distribution that was somewhat skewed towards greater readiness for work, reflecting the fact that many of the subjects in this pilot study were already integrated into sheltered workshops.

The diagnostic meaning of these scores awaits the outcome of research on the relationship between readiness scores obtained before entry to sheltered workshops and evaluations of the level of successful adjustment to the work environment, but studies of the reliability of the summary scores have indicated that they have excellent temporal stability and are satisfactorally free of variability of judgement for diagnostic purposes (Mellon, 1998).

The ERGOTEST HELLAS, 2nd Component:
Assessment of readiness for work via interactive play with a psychologist

In Greece, the office of special education in the Ministry of Education has studied the problems of persons with special needs, especially persons with mental retardation, since 1969. From that time, a 2-year program of continuing training in special education has been organized for teachers. In 1981, Law 1143 was passed by the Greek Government, which provided for «Regarding special professional education, vocation, and social suppport of persons with special needs» of persons with special needs. The education of persons with all levels of mental retardation is centered on the Sheltered Workshop Environment. In Greece, persons with mental retardation are often trained in gardening, homemaking, textiles and handiwork, ceramics, candlemaking, animal care, packaging and assembly, and woodworking.

In light of these developments, our research team has created an assessment insturment that evaluates persons with mental retardation via circumstances that are familiar and attractive to them—namely, play. It is well known that play is a form of expression that develops the imagination, facilitates attention and perception, and reinforces learning from practical action (Sutton-Smith, 1971). Play facilitates the development of motor skills and in general helps in the acquisition of cognitive abilities, and therefore was given the central role in the second component of the ERGOTEST HELLAS.

This second, interactive-play component of the ERGOTEST HELLAS is composed of 12 subtests. The first two subtests have a question-and-answer format, while the remaining ten subtests involve interactive play with specially designed and constructed toys. The toys are colorful and easily capture and maintain the interest of persons with mental retardation. The 12 subtests are listed in Table 2. The first subtest begins after some warmup play and the establishment of rapport with the examinee.

Table 2

Subtests of the Interactive-Play Component of the ERGOTEST HELLAS

1. Orientation in person, place and time
2. Discrimination/Comprehension of everyday events
3. Discrimination/Comprehension of number
4. Discrimination/Comprehension of spatial relations
5. Gross motor skills: **«The Waitperson Game»**
6. Motor categorization skills: **«The Packager Game»**
7. Fine motor skills: **«The Mechanic Game»**
8. Learning of hand-eye coordinated tasks: **«The Weaver Game»**
9. Graphomotor coordination/persistence: **«The Office Assistant Game»**
10. Comprehension of part-whole relations: **«The Gardener Game»**
11. Fine motor speed: **«The Carpenter Game»**
12. Procedural memory **«The Craftsperson Game»**

1. Orientation in person, place and time

This subtest consists of the eleven questions. The first five questions, which include "What is your name," "Where are you," and "How did you get here" compose a mental status screening examination—persons who are so poorly oriented as to not know who or where they are not currently likely to give their best performance on the other items, either because of their current emotional state, insufficient rapport with the examiner, or because of more chronic orientation difficulties (Anastasi, 1998). In such cases it is best suspend the test administration and try again later.

The second five questions concern bodily orientation. In order to follow instructions, avoid injury and learn new tasks readily, it is necessary for the sheltered workshop worker to readily discriminate the parts of his or her own body. Individuals with a poorly developed sense of self might indicate the corresponding parts of the examiner's body.

2. Discrimination/Comprehension of everyday events

This subtest consists of fourteen questions that test awareness of procedures and the comprehension of the relationship between common acts and their consequences. Individuals who do poorly on this subtest may be especially poor planners, may be unaware of common social conventions, and should not be expected to observe saftey rules.

3. Discrimination/Comprehension of number

Discrimination of quantity is a basic skill for many jobs, including assembly and packaging work. This subtest consists of the five items depicted in the transparency that test gross numeric skills (more than versus less than) as well as counting skills.

The questions involve concrete calculations of quantities of bolts, introducing one of the basic materials of the test. Individuals who have suffered ridicule or other traumatic experiences in the school environment often exhibit emotional behavior in counting tasks.

4. Discrimination/Comprehension of spatial relations

Following orders and procedures requires comprehension of relationships between objects in space and discrimination of the names of these relations.

This subtest consists of five questions which test awareness of self-object and object-object relations. The object-object relation questions require the examinee to place a bolt in various relations to a wooden tray (under, behind, etc.). Persons who perform poorly on this subtest may have weak search skills and conservation skills.

5. Gross motor skills: «The Waitperson Game»

Many vocations of mentally retarded persons involve the transfer of objects over short distances, often in a particular series and fashion. In this subtest, the examinee is invited to play the role of a waiter.

The game involves a wooden server's tray with handles, and five colored bolts. The tray has five colored spots that correspond to the colors of the bolts, and the examinee is invited to stand the bolts in position on the dots, simultaineously tapping fine motor skills and color discrimination. The examiner then models a complex gross motor procedure, lifting the tray slowly and carrying it to another table, where it is then placed. The examinee is invited to perform the same procedure.

In addition to testing gross motor coordination, the test requires procedural memory and motor concentration.

6. Motor categorization skills: «The Packager Game»

Many sheltered workshop occupations require strong motor categorization skills. For example, mentally retarded persons are frequently employed in sorting tasks and in the preparation of packages requiring specific assortments of items. In The Packager Game, the examinee is asked to sort an admixture of bolts, nuts, washers and wooden pegs into the appropriate bins of a wooden tray. The task is timed and the number of properly sorted items is counted.

Because the items are colored but must be sorted by type, individuals that have difficulty attending to a single dimension of complex objects have particular difficulty. The task also taps motor persistence and energy level. Because it does not require a high level of motor coordination, it provides a good nonverbal test of cognitive skills.

7. Fine motor skills: «The Mechanic Game»

In this subtest the examinee is invited to play the role of mechanic, and is provided with a standing wooden board with holes drilled in it, and a set of bolts, washers and nuts. The task is to place a bolt in a hole and hold it with one hand, place a washer on the other end of the bolt, and finally thread a nut on the bolt. The task involves fine motor coordination between both hands. It also tests approach to unfamiliar tasks, persistence, and often reaction to failure in the first attempts to thread a bolt.

The nuts, bolts and washers of «The Mechanic Game» are colored, and during the demonstration the examiner matches the colors without instructing the examinee to do so. The matching or nonmatching of the examinee reflects their implicit awareness of procedures.

8. Learning of hand-eye coordinated tasks: «The Weaver Game»

In this game the examinee is invited to thread a cord through a parallel series of holes, following a set pattern. The task requires fine motor skills and new hand-eye learning. Like «The Mechanic Game», «The Weaver Game» is timed and is most effecently performed with two hands, but it *can* be performed with only one hand. Thus it can reveal overdependence on a single hand. Its position after the two-hand «Mechanic Game» provides a strong test of this tendency.

This game requires planning of effects, reveals awareness of errors, tendency to correct errors and error frustration.

9. Graphomotor coordination/persistence: «The Office Assistant Game»

Many vocations of mentally retarded persons are highly repetetive and require sustained attention to a limited range of attributes, toleration of monotony, and sustained activity. «The Office Assistant Game» provides a test of these atttributes, essentially by inviting the person to perform a rather monotonous task for up to six minutes. Specifically, the examinee is given a sheet of paper with many Xs and Os and is asked to fill in the Os with a pencil.

The task does require limited graphomotor coordination, which can be assessed by the accuracy of the filled Os, but is more importantly a test of motor persistence, concentration, and sustained attention.

10. Comprehension of part-whole relations: «The Gardener Game»

In this task, the examinee is presented with a wooden board with indentations in the shapes of fruits, and a set of wooden fruits that are cut in half annd mixed together. The examinee is invited to put the parts together to form fruits in the appropriate indentation. This is a familiar and fun game for many mentally retarded persons, and it provides a colorful treat after the boring «Office Assistant Game». But it has a serious purpose, as it provides a nice test of problem solving style (for example, random movements, planning, logical versus empirical style, etc), awareness of part-whole relations, and relatively abstract reasoning skills.

11. Fine motor speed: «The Carpenter Game»

In «The Carpenter Game» the examinee is presented with a set of wooden pegs and a pegboard that resembles a cribbage board. The task is to place the pegs in the holes as fast as possible, using only the dominant hand. The game is then repeated using only the nondominant hand.

Because this task requires neither categorization nor a high degree of motor coordination, it provides a relatively clear test of motor speed, which plays an important role in many vocations of mentally retarded persons, and in comparison with performance on motor tasks that require other skills, «The Carpenter Game» can help to reveal specific cognitive and

motor deficiencies. The difference in performance between the dominant and nondominant hands can rather clearly reveal extreme hand dominance.

12. Procedural memory «The Craftsperson Game»

Directly after the motor game with the lowest «cognitive load» the examinee is invited to try a game that requires a high level of concentration and procedural memory. «The Craftsperson Game» is an assembly game. The examinee is shown a small wooden box with five slots, and five flat wooden sticks that fit into the slots. The sticks have a hole in one end, and when they are placed properly, a peg is passed through them, which holds them in place. The assembly procedure is demonstrated to the examinee, and he or she is asked to repeat it. Because the game tends to be difficult to solve in any other way besides remembering, it provides a good test for memory for complex procedures.

Case history.

A full understanding of the diagnostic meaning of scores on the Interactive-Play Component of the ERGOTEST HELLAS awaits the completion of a standardization of the scores of persons before and after their entrance to the Sheltered Workshop Environment. But even without reference to normative data, the Interactive-Play Component provides the trained psychologist with a series of work-related situations that mentally retarded persons find interesting, attractive and familiar enough to perform readily, in which important observations about the cognitive, motor and emotional functioning of the person can be made, even in persons who are already working.

For example, the ERGOTEST HELLAS was recently administered to Maria (a pseudonym), a 28-year old woman with Down's Syndrome. Maria's parents left her with an aunt when she was a young girl. Her I.Q. is estimated to be between 50 and 70 (there are currently no reliable tests of adult intelligence published in Greek). Since 1988 she has worked in three different sheltered workshops: woodworking, weaving, and gardening. Maria's interests include music and dance, and she participates in theatrical performances at her school. She is an outgoing person with a warm interpersonal style and a ready smile.

Consistent with her long and largely successful work record, on the *Survey of Adaptive Skills and Social-emotional Behavior,* Maria's *General Adaptive Skills, Social-emotional Behaviors*, and *Overall Readiness for Work*, were all judged by her educators to be between 93 and 95% of ideal readiness. This means that on a large majority of the 75 items of the survey, Maria's skills and behavioral characteristics were judged to have reached a satisfactory state of development.

While her educators reported high satisfaction with her skills, her behavior on the Interactive-play Component of the ERGOTEST HELLAS revealed a number of work-related behaviors that could benefit from attention and improvement. Maria's coping style is to pretend she dosen't have any difficulties, and she is aware of and adept at covering her deficiencies with a quick verbal wit and amusing dramatic interpersonal style. Maria knows the names of the numbers and both of her educators believe that Maria can calculate sums in the hundreds to make change, but in fact she could not count five bolts. Her answer to the question, How many bolts, was a characteristically cheerful: *A lot! Yes, I can definitely say that there are quite a few bolts here. Quite a few bolts!*

Maria's general tactic when she was having difficulty was to cheerfully change the subject. When she made a mistake in the pattern of the «Weaver Game», she complimented the examiner on her hairstyle and asked the name of her stylist. Her answers to questions, right or

wrong, were almost always prefaced with «Certainly», «of course», or some other indication that the answer was obvious or easy for her.

In a workshop with overtaxed educators, Maria's easy, accomodating style can prevent her from getting the help that she needs to improve her skills. Although she is adept with her right hand, she uses her nondominant left hand only when it is absolutely necessary «The Mechanic Game», perhaps so that her weakness with it (evident on «The Carpenter Game») is not revealed. She works persistently and with attention as long as her efforts are successful (for example, on the «Office Assistant Game», but she is easily frustrated and becomes upset when she cannot cover her mistakes.

While her evaluation revealed that Maria has the required behavioral repertoire for success in a Sheltered Workshop environment, her enjoyment of work and her acquisition of new skills are likely inhibited by her fear of negative evaluation and her accomodating coping style. These fears are now being addressed in the context of acquisition of counting skills and motor skills with the nondominant hand.

In conclusion, while much work remains to be done, the research findings and practical experience to date suggests that the ERGOTEST HELLAS appears to be well on its way towards its goal of facilitating the workplace adaptation of persons with mental retardation. Through the use of play, we hope to ease the transition to the world of work, and to the enhancement of self-esteem, independence, and emotional satisfaction that work provides.

Of course, at the end of the working day, the person with mental retardation—like all of us—has a need and a right to play for the sake of play alone.

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