

---

## A FIVE-YEAR ISRAELI EXPERIENCE WITH THE DC: 0–3 CLASSIFICATION SYSTEM

---

**MIRI KEREN**

*Sackler Medical School*

**RUTH FELDMAN**

*Bar Ilan University*

**SAM TYANO**

*Sackler Medical School*

**ABSTRACT:** Clinical and research experience with the DC: 0–3 classification in an Israeli infant mental health unit is presented in this article. The clinical use of the DC: 0–3 diagnoses is described in the context of our routine assessment process and basic theoretical approach. Reasons for referral and distribution of DC: 0–3 diagnoses of 414 infants and parents, assessed at the unit between the years 1996 and 2000, are shown. Twenty-five percent had no diagnosis on any of the four axes, 29.5% of the infants had both a Primary and a Relational diagnosis, and only 5.6% had a diagnosis on each of the four axes. Less than half (45%) of the infants received a Primary diagnosis, and 52% had a Relational diagnosis. Possible explanations are given, and problems we faced with the use of the classification are described. Research use of the DC: 0–3 classification is illustrated through the summary of a previously published study on diagnoses and play and feeding interactions of referred and nonreferred infants. These research findings had significant implications for our clinical work, such as the validation of the training we gave community nurses, and the usefulness of the routine combined use of categorical and dimensional tools in a clinical setting.

**RESUMEN:** En este ensayo se presenta un caso de experiencia clínica e investigativa con la clasificación DC: 0-3 en una unidad de salud mental infantil en Israel. El uso clínico de DC: 0-3 se describe dentro del contexto de nuestro proceso rutinario de evaluación y el acercamiento teórico básico. Se muestran las razones para enviar a un paciente a un especialista y para distribuir el diagnóstico del DC: 0-3 de 414 infantes y sus padres, evaluados en la mencionada unidad entre 1996 y 2000. Veinticinco por ciento de este grupo no tuvo diagnóstico en ninguna de las 4 categorías; 29.5% de los infantes tuvo tanto un diagnóstico primario como un diagnóstico de relación con otras personas; y solamente un 5.6% fue diagnosticado en cada una de las 4 categorías. Menos de la mitad (45%) de los infantes recibieron un diagnóstico primario; y 52% recibió un diagnóstico de relación con otras personas. Se presentan las posibles explicaciones y se describen los problemas que enfrentamos con el uso de la clasificación. La investigación sobre el uso de la clasificación DC: 0-3 se muestra por medio del resumen de un estudio previamente publicado sobre el diagnóstico y las interacciones de juego y alimentación tal como ocurren con infantes enviados y no enviados a especialistas. Estos resultados investigativos tuvieron implicaciones significativas en nuestro trabajo clínico, tales como la validez del entrenamiento que les ofrecemos a las

---

Direct correspondence to: Miri Keren, Infant Mental Health Clinic, Orlanski 8, Petah Tiqwa, Israel; phone: 972 3 9331927; fax: 972 3 9087762; e-mail: ofkeren@internet-zahav.net.

---

**INFANT MENTAL HEALTH JOURNAL**, Vol. 24(4), 337–348 (2003)

© 2003 Michigan Association for Infant Mental Health

Published online in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/imhj.10060

enfermeras de la comunidad, así como la utilidad del uso rutinario combinado de herramientas categóricas y dimensionales en un campo clínico determinado.

**RÉSUMÉ:** L'expérience clinique et l'expérience de recherche avec la classification DC: 0-3 dans une Unité de Santé Mentale Infantile sont présentées dans cet article. L'utilisation clinique des diagnostics DC: 0-3 est décrite dans le contexte de notre processus routinier d'évaluation et de notre approche théorique de base. Les raisons pour lesquelles les enfants ont été envoyés à l'Unité et la distribution des diagnostics DC 0-3 de 414 bébés et leurs parents, évalués dans l'Unité entre 1996 et 2000, sont données. 25% n'avaient aucun diagnostic sur aucun des 4 axes, 29,5% des bébés avaient à la fois un diagnostic primaire et un diagnostic relationnel, et seuls 5,6% avaient un diagnostic sur chacun des 4 axes. Moins de la moitié (45%) des bébés reçoivent un diagnostic primaire, et 52% avaient un diagnostic relationnel. Des explications possibles sont offertes, et les problèmes auxquels nous avons fait face avec l'utilisation de la classification sont décrits. L'utilisation de la classification DC 0-3 en matière de recherche est illustrée à travers un résumé d'une étude sur les diagnostics et les interactions lors de séances de jeu et de prise de nourriture de bébés qui nous avaient été envoyés et de bébés qui ne nous avaient pas été recommandés. Ces résultats de recherche eurent des implications importantes pour notre travail clinique, comme par exemple la validation de la formation que nous avons donnée aux infirmières de la communauté et l'utilité de la routine combinée à l'utilisation d'outils catégoriques et dimensionnels dans un cadre clinique.

**ZUSAMMENFASSUNG:** Klinische und forschungsmäßige Erfahrungen mit der DC: 0-3 Klassifikation in einem israelischen Zentrum für die seelische Gesundheit der Kleinkinder, werden in dieser Arbeit vorgestellt. Die klinische Anwendung der DC: 0-3 wird im Kontext der Routineuntersuchung und der zugrundeliegenden theoretischen Überzeugungen, präsentiert. Es werden die Gründe für die Überweisung und die Verteilung der DC: 0-3 Diagnosen von 414 Kleinkinder und deren Eltern, die in unserer Einheit in den Jahren 1996 – 2000 untersucht wurden gezeigt. 25% hatten auf allen 4 Achsen keine Diagnose, 29,5% der Kleinkinder hatten sowohl eine primäre und eine Beziehungsdiagnose und nur 5,6% hatten eine Diagnose auf allen 4 Achsen. Weniger als die Hälfte (45%) der Kleinkinder bekamen eine primäre Diagnose und 52% hatten eine Beziehungsdiagnose. Mögliche Erklärungen dafür werden gegeben und die Schwierigkeiten, die wir mit dem Klassifikationssystem hatten beschrieben. Die Anwendung des DC: 0-3 in der Forschung wird durch eine Zusammenfassung bereits publizierter Studien zur Diagnostik und zu Spiel- und Fütterungsinteraktionen von überwiesenen und nicht überwiesenen Kleinkindern, gegeben. Diese Forschungsergebnisse hatten einen signifikanten Einfluss auf unsere klinische Arbeit, so wie zum Beispiel in der Ausbildung der Gemeindeschwestern und auf die Nützlichkeit des Einsatz von kategorialen und dimensional Werkzeugen in der Routine einer klinischen Umgebung.

抄録：イスラエル乳幼児精神保健ユニットにおける **DC:0-3** 分類の臨床および研究経験が、この論文に提示される。**DC:0-3** 診断の臨床的利用は、われわれの日常業務での診断評価プロセスおよび基本的理論的アプローチの文脈で、記述される。**1996** 年から **2000** 年の間にユニットで診断評価された **414** 人の乳幼児と親の、紹介された理由および **DC:0-3** 診断の分布が示される。**25%** が4つの軸のいずれにも診断されなかった。乳幼児の **29.5%** が主要診断と関係性診断の両方を持っていた。そして **5.6%** だけが4つの軸それぞれに診断を持っていた。半分以下 (**45%**) の乳幼児が主要診断を受け、そして **52%** が関係性診断を持っていた。可能性のある説明が与えられ、われわれが分類の利用に際して直面した問題が記述される。**DC:0-3** 分類の研究的利用は、以前出版した診断についての研究の要約、および紹介された乳児と紹介されていない乳児についての遊びと摂食の相互作用を通して、説明される。これらの研究の所見には、われわれが地域の看護師 **community nurses** に与えた訓練の妥当性のように、われわれの臨床の仕事にとって重要な意味があり、そして臨床場面でカテゴリー的なツールと次元的ツールを日常的に組み合わせて使うという有用性がある。

\* \* \*

In the five past years, infant psychiatry in Israel has become an area of increased interest to clinicians, after many years of serving mainly as a domain of research for developmental and experimental psychologists. Following the implementation of the first community Infant Mental Health Clinic in 1996 in Petah Tikva, a middle-size town in the greater Tel-Aviv area, we have been currently involved in expanding the project to other parts of the country. The focus of this project is to train new teams to detect and treat early signs of emotional distress in infants and parents (Keren, Fivaz-Depeursinge, & Tyano, 2001). A major component of the training program is, as an essential first step, to teach to evaluate the infant mental/developmental/relational status and following the evaluation, to conceptualize the assessment in a clear, concise, and standard way. The use of a common clinical descriptive language is, in our view, very important in the process of implementing a relatively new field, for both clinical dialogue and research. As such, we have introduced the DC: 0–3 (Zero-to-Three, 1994) in all the existing infant mental health clinics (three at the moment, three more are in process of opening).

### CLINICAL AND RESEARCH USE OF DC: 0–3 IN ISRAEL

As far as we know, our Infant Mental Health Unit is the only setting in Israel where the DC: 0–3 classification is used on a routine basis, for clinical as well as for research purposes. The two new Units have just started to use it, after having been trained by us. Unfortunately, most of the Israeli developmental-clinical researchers do not utilize the DC: 0–3 in their research protocols. It is to be remembered that in Israel, as well as anywhere else, the debate whether categorical or dimensional descriptions of psychopathology are superior often polarizes the disciplines of psychiatry and developmental psychopathology. In addition, the official classification of diseases (including mental health disorders) used in Israel is the ICD-10 (World Health Organization, 1988) on first place, and the DSM-IV (American Psychiatric Organization, 1994) on second place. Introducing an additional and new classification does create resistance, and is often seen as unnecessary (to say the least).

### CLINICAL USE OF THE DC: 0–3 DIAGNOSES

Our setting is a community-based infant (0–3 years) mental health unit, created in 1996, and located within a primary medicine outpatient clinic. Our main sources of referral are community nurses from Well-Baby Clinics, pediatricians from the community and from the Children's hospital located in our region, social workers, adult psychiatrists from the Mental Health Center to which we are affiliated, and self-referrals by parents. Our routine assessment process includes a clinical interview with both parents, with special attention to the parents' family background, previous losses and illnesses, the observation of the parent–infant and two parents–infant interactions (many of these are videotaped, and reviewed later with the parents). The summary of the clinical data is recorded on an intake form we have built based on items of the DC: 0–3 form and the JACAP Practice Parameters for the Psychiatric Assessment of infants and toddlers (American Association of Child and Adolescent Association Official Action, 1997). The standard developmental test Bayley is performed whenever we suspect any degree of developmental delay. Whenever a significant developmental delay is detected, the infant is referred for pediatric neurological workup outside of our unit, if it has not been done before the referral to our unit. Data from family pediatricians and community health nurses is routinely collected. Home visits are done whenever we are concerned with the quality of the environment provided to the child, and we use the HOME (Caldwell & Bradley, 1979) items as points of reference. We formulate the diagnosis both in DC: 0–3 nosological terms and in psycho-

dynamic concepts (such as parental projections, separation-individuation issues, transgenerational transmission). We usually need the three first sessions to make the diagnosis. We use DSM-IV (1994) diagnoses when DC: 0–3 diagnoses do not describe the case; for instance, in our clinical experience, disruptive behavior can already be observed in three year olds, and the DSM-IV diagnosis of Oppositional Behavior Disorder is relevant. We did not find ICD 10 (1988) diagnoses very helpful, especially because of its single dimensional approach (as opposed to the multiaxes principle that underlies both DSM and DC: 0–3 classifications). Our diagnostic and therapeutic approach is based on the transactional model of normal and abnormal development, with emphasis on intergenerational processes and core concepts such as the “motherhood constellation” (Stern, 1995), the “clinical infant” (Stern, 1985), vulnerability/risk factors versus resilience/protective factors (Sameroff & Fiese, 2000). The concept of “clinical infant” is especially relevant to our work, because it relates to the common clinical situation where the infant is not viewed as an individual by his/her parents, but as an aspect of the parent’s unconscious and problematic sense of self and other. Instances of such parental constructions of the infant include the “evil” infant, the “destructive” infant, the “insatiable” infant, the “invisible” infant, the “independent” infant (Lieberman, Silverman, & Pawl, 2000).

Between the years 1996 to 2000, we have seen 431 infants and parents (starting with 60 during the first year of implementation, going up to 65 in 1997, 108 in 1998, 102 in 1999, and 125 in 2000). The overall percentage of drop out before the completion of assessment was 9.2% ( $N = 40$  out of 431). The distribution of age at referral, as shown in Figure 1, was quite even along the three years of life ( $N = 414$ , 17 missing cases due to incomplete recording at the start of the Unit implementation). The mean age was 19.0 months ( $SD = 10.70$ ). Maternal educational level was on average 3.5 (scale: 1 = no high school diploma, 2 = high school diploma, 3 = posthigh school vocational degree, 4 = bachelor’s degree and above). All the

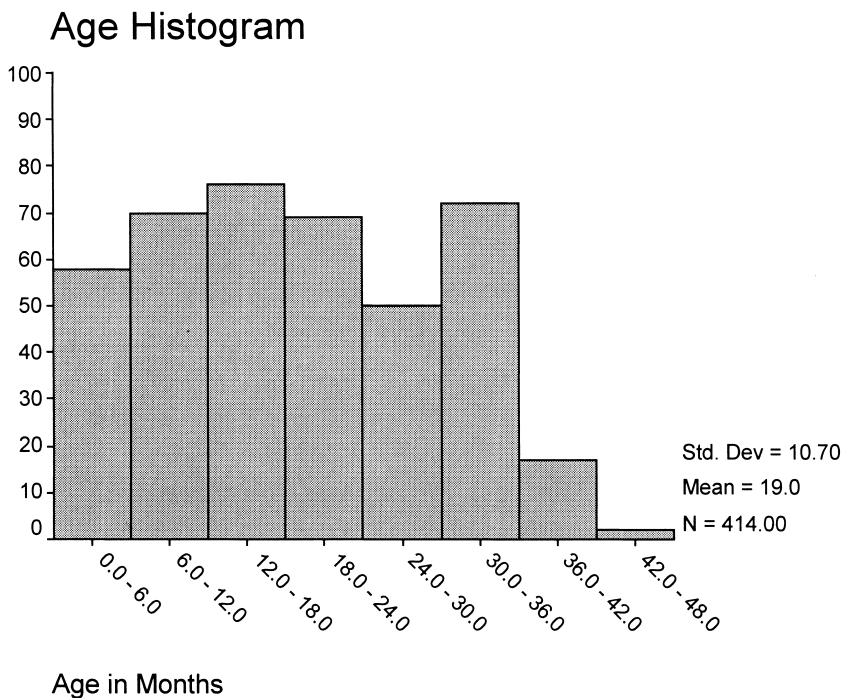


FIGURE 1. Distribution of age at time of referral.

**TABLE 1.** *Main Reasons for Referral per Age and per Group of No DC:0–3 Diagnoses and DC:0–3 Diagnoses*

Reason	0–12 Months		12–24 Months		24–36 Months	
	No Dx N = 29	DC Dx N = 97	No Dx N = 40	DC Dx N = 103	No Dx N = 30	DC Dx N = 88
Sleep	47%	27%	27.5%	29%	3%	9%
Parental	20%	15%	10%	3%	—	—
Eating	13%	18%	20%	28%	6.5%	14%
Aggression	—	—	15%	11%	42%	26%
Cry/irritable	3%	10%	—	5%	3%	2%
Susp. PDD	2.5%	3%	2.5%	7%	6%	16%
Temper tantrums	—	1%	5%	1%	6.5%	3%
Attention	—	—	—	—	6.5%	4%

Notes: 1. Abbreviations: Dx = diagnosis; Sups. PDD = suspected pervasive developmental disorder.

2. Other reasons for referral, under 3% of frequency, included mother–infant interaction, stranger anxiety, toilet training, sibling rivalry, fears, masturbation, head banging, clinginess, hair pulling, head banging.

referred families were Israeli Jews (although our Unit is open to the local Israeli Arab population, parents of very young Arab children are very reluctant to use mental health services). 80% of the mothers were employed outside the home. Fifty-nine percent of the infants were boys, 41% girls.

### *Reasons for Referral*

Table 1 presents the distribution of reasons for referral by age. During the first year of age, the first five reasons for referral were, in decreasing order, sleeping problems, parental reasons, feeding problems, irritability, and suspected pervasive developmental disorder. During the second year, sleeping problems remained the first most common reason, then feeding problems, aggressive behavior, relating problems, and temper tantrums. During the third year, aggressive behavior came first, then feeding problems, relating problems, sleep problems, and attentional problems. This observed change in order of frequency of the reasons for referral is in accordance with the expected developmental issues the child encounters along the three first years of his life.

The distributions on the five Axes of the DC: 0–3 diagnosis over the period of these first five years are presented in the following section.

### *Axis I Diagnoses*

As shown in Table 2, only half (45%) of the infants received a Primary diagnosis, meaning that in half of the cases, the referral symptoms did not reflect an “intrinsic” disorder in the infant, but a disturbance on one of the other axes. Among those who did receive a Primary diagnoses, Eating Behavior and Sleeping Behavior disorders were the most common ones, followed by Adjustment reactions, and Regulatory and Anxiety disorders. Mixed disorder of Expressiveness, PTSD, and Disorders of Attachment were at low frequencies (1–2%). Mood disorder diagnosis was very infrequent (0.5%). It is not clear whether these frequencies reflect the true incidence of Mixed disorder of Expressiveness and Mood disorder or are, in fact, due to the difficulty we faced in diagnosing them. Our low rate of infant depression as a primary

**TABLE 2.** *Distribution of Axis I Diagnoses over the 5-Year Period*

<i>Primary Diagnosis</i>	N	%
No diagnosis	238	55.2
Eating behavior disorder	51	11.8
Sleep behavior disorder	43	10
Adjustment reaction disorder	30	7
Regulatory disorder	22	5.1
Anxiety disorder	20	4.6
Attachment disorders	8	1.9
Mixed disorder of emotional expressiveness	6	1.4
Oppositional disorder	6	1.4
Posttraumatic stress disorder	5	1.2
Mood disorder	2	0.5

diagnosis on Axis I is not due to a lack of awareness to the very existence of such a diagnosis, but to our tendency to view it as one of the symptoms of a severe relational disorder. We did not see cases where the relational disorder had disappeared while the infant stayed in a depressive state, but we do not feel our experience is wide enough to be decisive on this point. The absence of diagnosis of Communication and relating disorders is due to the fact these children, in our system, are usually referred to Child Development Centers, and not to infant mental health units (these are quite new here). In the last two years (2001–2002, which have not been included in the statistics we present here), we have had several cases where the child has been diagnosed with Pervasive Developmental Disorder NOS, and the parents referred to us for second opinion.

Table 3 shows the mean distribution of Axis II diagnoses over the same period of time. We used the PIR-GAS cutoff of 40. Again, almost half (48%) of the referred infants and parents had a diagnosis other than a relational one. In other words, based on these findings, equating all dysfunctional symptoms in infants to a relational problem might be erroneous, despite Sroufe's (1989) strong statement that "most problems in the early years, while often manifest poignantly in child behavior, are best conceptualized as relationship problems" (p. 70).

As detailed in Table 3, within the group of infants and parents with relational disorders, the Mixed type was the most common (17.6%), followed by the Anxious type (12%) and the Overinvolved type (11%); the Underinvolved type was much less common (7.4%), and even less were the Angry/Hostile type (3%) and the Abusive type (0.7%). While looking at the possible significance of these distributions, one should remember the nature of the setting to which the infants and families are referred. For instance, an Infant Unit serving Child Protection

**TABLE 3.** *Distribution of Axis II Diagnoses over the 5-Year Period*

<i>Relationship Disorder Classification</i>	N	%
No relational diagnosis	207	48.0
Mixed type	76	17.6
Anxious tense type	52	12.1
Over involved type	48	11.1
Under involved type	32	7.4
Angry/hostile type	13	3.0
Abusive type (physical)	3	0.7

**TABLE 4.** *Distribution of Axis III Diagnoses over the 5-Year Period*

<i>Medical/developmental diagnosis</i>	N	%
No diagnosis	339	78.7
Developmental delays	54	12.5
Failure to thrive	14	3.2
Medical diagnosis (chronic illness)	12	2.8
Long-term consequences of premature birth	3	0.7

services will probably see much more Angry/Hostile and Abusive types of parent–child relational disorder, than a Unit like ours that is in contact with Social Services but is not an official agent of the Child Protection department.

The same remark holds for the significance of the distribution of Axis III diagnoses (Table 4). Indeed, the fact that our Unit saw mostly (78.7%) infants without any medical or developmental problems is explained by its specific location within the community, nearby but not within the Children’s Hospital (that has a Child Developmental Center of its own). It seems therefore that our Unit gets the “purer” mental health cases, while those with developmental and or medical problems (some 15%) are those whom the hospital-based teams have difficulty in handling. In the last months, we have added to our Unit a consultation day inside the Children’s Hospital, and indeed, we are now seeing much more children with medically compromised conditions than before.

Finally, the distribution of Axis IV diagnoses (Table 5) shows that parental psychiatric disturbances (including Personality Disorders) are by far the most prevalent psychosocial stressor for those infants and parents referred to our Unit, which is identified, by definition, with mental health. What may be more interesting is the finding that more than half (60%) of the referred infants had no obvious psychosocial stressors that triggered infant symptomatology. Might parenthood itself be, in most cases, the main factor of stress that leads to maladaptive functioning? According to Stern’s concept of Motherhood Constellation, we may answer positively. From this perspective, the birth of a baby pushes the mother into a new and unique psychic organization, characterized by four themes of preoccupation around her ability to maintain the life of the baby, to emotionally engage with him, to create a supporting system for him, and to transform her self-identity (Stern, 1995). In addition, in the case of first borns, transition to parenthood has been described as a potentially stressful phase in the couple’s life

**TABLE 5.** *Distribution of Axis IV Diagnoses over the 5-Year Period*

<i>Psychosocial stressors classificatoin</i>	N	%
No diagnosis	259	60.1
Parental psychiatric problem	94	21.8
Marital conflict	33	7.7
Loss	10	2.3
Divorce	8	1.9
Acute trauma	6	1.4
Birth of sibling	5	1.2
Abuse	2	0.5
Adoption	1	0.2
Other	13	3.0

(Grossman, Eichler, & Winikoff, 1980). Heinicke (2000) has pointed out the impact of prebirth parent and marital characteristics on the early family development. Parents who showed efficient, nonanxious, efficient problem solving, and who were able to sustain a positive mutuality with their spouse while maintaining their autonomy and self-esteem, were more likely to provide an optimal parenting environment. One of the clinical implications of these findings is that the earlier the intervention is initiated (as in pregnancy), the more likely it is to be effective. Our own finding strengthens this statement, though indirectly.

Out of the overall number of referred cases ( $N = 431$ ), 109 cases (25.3%) had no diagnosis on any of the four axes, including the 40 cases (9.2% of total  $N$ ) that had dropped out before completion of the assessment. As shown in Table 1, this subgroup was not different in terms of the five main reasons for referral from the group that received a DC: 0–3 diagnosis. We suggest three possible explanations for the relatively high proportion (a quarter of the sample) of children who, despite similar reasons for referral, did not receive any DC: 0–3 diagnosis. First, it might reflect some false negative cases, where, for example, a relational disorder was not diagnosed, although there were signs of a distressed or a perturbed relationship (PIR-GAS between 40 and 79). To examine this hypothesis, we may need, in the future, to use the Axis II in a dimensional way rather than in a categorical (clinical versus nonclinical). A second, complementary, possibility is the expression of some false positive cases. This explanation is quite plausible in our specific case where, for the sake of early detection and sensitization of the referring sources (mostly pediatricians and community health nurses) to the very existence of emotional aspects of development in infants, we have encouraged them to refer to us whenever they have some concern about the emotional status of either the parent, the infant, or the dyad. Therefore, we did not define a cutoff point of symptoms severity for referral, and this has probably impacted on the level of referral specificity. Finally, some of the cases probably reflect the parents' adaptation to their parental role to the specific infant (not necessarily first borns), more than psychopathology.

Diagnoses on both Axis I and Axis II were given in 29.5% of the cases ( $N = 127$ ). Only 5.6% ( $N = 24$ ) of the infants had a diagnosis on each of the four axes. One might have expected a higher frequency of combined primary diagnosis for the infant and parent–infant relational disorder, taking into account the impact of the infant's behaviors and characteristics (such as temperament) on the parent's perception and reactions to him/her. These findings, if replicated in other infant mental health units, strengthen, in our view, the multiaxial approach that views each axis as an independent entity.

We need to be cautious about our results because of the following difficulties we encountered while routinely using the DC: 0–3 classification in our clinical work. First, criteria for different types of disorders and comorbid diagnoses are not precise enough, especially for entities like Mixed disorder of emotion expressiveness, and disorders of mood and affect. The DSM-IV category of "Oppositional defiant disorder" has no equivalent in the DC: 0–3, despite the fact that two and a half year olds can be significantly aggressive and oppositional. Does this lack of category implicitly imply that this condition should be seen as a symptom of a relational disorder? We encountered the same issues with the infants with trichotillomania. Also, the manual does not specify standard ways of assessing the parent–infant relationship, and as far as we know, reliability and validity data about the criteria are still unavailable. In addition, the DC: 0–3 manual requires a score of 40 or less on the Parent–Infant Relational Global Assessment Scale (PIR-GAS) to give an Axis II diagnosis of relational *disorder*. Consequently, a distressed or a perturbed relationship will not be reflected in the Axis II, despite its potential significant impact on the child. Also, relating to the guidelines given for selecting the appropriate diagnosis, we are still unclear about several questions. For instance, how can there be a diagnosis of Reactive attachment disorder on Axis I without a relational diagnosis



on Axis II? An additional confusing issue we face quite often is related to the cases where the infant has a feeding disorder that is the reflection of a relational disorder, and therefore, it should be, based on the manual, diagnosed only with the Axis II diagnosis; on the other hand, if the feeding problem is observed outside the relationship, the infant should have it as a Primary diagnosis on Axis I. Although insecure on this point, we decided to give a diagnosis on both axes.

To conclude, despite all these limitations, these findings underscore the need for transactional approach to the process of routine mental health evaluation of the infant. This integrative approach enables the clinician to link the unspecific symptoms for referral to the main source of problem, being either the infant, the parent, and/or their relationship, and to determine the extent to which environmental stressors are related to the infant's symptoms.

### ***Research Use of the DC: 0–3***

The Israeli context of public preventive medicine system applied in neighborhoods-based Well-Baby Centers is a main element of our community infant mental health unit, most of the referrals coming from these centers. With this concept in mind while implementing the unit in January 1996, a training program was established for the 15 Well-Baby centers nurses in our city (Petah-Tikva) to sensitize them to early signs of emotional distress or disrupted parent–child relationships (with or without overt signs of developmental delays). Routine questions with regard to sleep, eating, and toileting habits were introduced. Populations at risk for emotional disorders (e.g., Very Low Birth Weight infants, malformed or sick babies, maternal physical, or mental health complications, domestic conflict, stressful life events) were pointed out.

Based on this training program, referred families have been, since then, sent to our clinic with a referral letter that includes reason(s) for referral and the infant's developmental chart. Criteria for referral include signs of infant distress (feeding and/or sleep problems, irritability, aggressive behaviors, inhibited behaviors, weariness), signs of parent distress (anxiety, sadness, feelings of helplessness and incompetence, irritability), and signs of maladaptive interactive patterns (verbal hostility, lack of physical contact, avoidance, intrusiveness).

Our first study in this community-based setting was to describe the distribution of symptoms and DC: 0–3 diagnoses in our clinic and to compare play and feeding interactions of referred and nonreferred infants (Keren, Feldman, & Tyano, 2001).

Between January 1996 and December 1997, 140 infants and parents were referred to the clinic. One hundred thirteen of them were clinically assessed and diagnosed with the DC: 0–3 classification, 27 dropped out. Then, on January 1998, the comparative study was launched. Among the next 40 referred infants and parents, 30 agreed participate in the study. The 30 referred infants were matched with 30 nonreferred infants for age, gender, birth order, and ethnicity (Western Jews, Eastern Jews, recent immigrants from former USSR) randomly selected from the same neighborhoods and Well-Baby clinics. Fifty-five nonreferred families had been approached, out of which 30 consented to participate. As indicated by the Well-Baby clinic's record, the participating and nonparticipating families did not differ on demographic or infant health variables. The comparative sample finally included sixty infants and parents. In each group there were 22 boys and eight girls. The two groups were matched for age, maternal age, education level, and vocational status.

Diagnoses of infants and parents referred to our clinic were based on the DC: 0–3. Infants were diagnosed by a child psychiatrist (MK), trained to use the classification, and 15 cases were assessed separately by a clinical psychologist (RF). All primary diagnoses (Axis I) and 92% of the relationships diagnoses (Axis II) were reliable between the two. The Axis II di-

agnosis was based on the clinical global impression of the quality of mother–child interactions and on the PIR-GAS. The 30 nonreferred dyads had no clinical assessment, but significant problems were ruled out during the initial telephone call to the family. Mothers and infants from both groups were videotaped by a trained psychology student in two 15-minute interaction sessions (counterbalanced); a free play session and a feeding session and the Home Observation for Measurement of the Environment (HOME) (Caldwell & Bradley, 1979) was completed.

Play and feeding interactions were coded with the Coding Interactive Behavior (CIB) (Feldman, unpublished manual). The CIB includes 42 codes rated globally on a five-point scale: 21 are parental codes, 16 are child codes, and five are dyadic codes. The CIB is an extension of a previous coding system for parent–infant interaction, which has shown sensitivity to infant age, interactive setting, and at-risk development. Codes were averaged into six composites that were theoretically derived and touched on diverse aspects of early mother–infant relationship, showing acceptable to high levels of internal consistency (Feldman, 2000; Feldman, Greenbaum, Mayes & Erlich, 1997; Mayes, Feldman, Granger, Haynes, Bornstein, & Schottenfeld, 1997).

Interactions were coded by two graduate students in psychology who were blind to group assignment, and to the DC: 0–3 diagnoses. Interrater reliability averaged intraclass,  $r = .91$  for play and  $.92$  for feeding. The specific codes included in each composite and the internal consistency for the sample in the two groups were as follows:

1. A: Maternal Supportive Presence (alpha =  $.96$  play,  $.95$  feeding): maternal acknowledging of child's communication, maternal vocal appropriateness and clarity, maternal supportive presence, maternal resourcefulness, dyadic reciprocity, and dyadic adaptation-regulation.
2. B: Mother Limit-Setting (alpha =  $.86$  play,  $.87$  feeding): maternal consistency of interactive style, mother limit-setting, maternal persistency, child compliance to parent's requests and suggestions, child reliance on mother for help, and interactive fluency.
3. C: Mother Intrusiveness (alpha =  $.65$  play,  $.67$  feeding): interruption, forcing, maternal anxiety, criticism, parent-led dyadic interaction.
4. D: Mother–Child Joint Positive Affect (alpha =  $.82$  play,  $.85$  feeding): mother elaborating child's initiations, mother enthusiasm, mother joint attention, mother praise, child joint attention, child affection toward mother, child initiation.
5. E: Child Withdrawal (alpha =  $.86$  play,  $.87$  feeding): avoidance of mother, withdrawal, affective lability, fatigue.
6. F: Dyadic Joint Negative State (alpha =  $.84$  play,  $.85$  feeding): dyadic negative state, dyadic constriction, mother negative affect, mother hostility, child negative Affect.

Among the 113 referred and diagnosed infants, the main reasons for referral were eating problems, sleep problems, aggressive behavior, irritability, and maternal depression. In our five-year sample described above, sleeping, eating problems, aggressive behaviors were also the main reasons for referral, but parental problems appear as a common reason of referral only in the large sample. This is probably due to the fact that only in the last three years, mental health services for adults have learned to refer the parents' young children to us. The distribution of diagnoses between the small and large samples was quite similar in terms of the first three most common ones: eating behavior disorder, sleep behavior disorder, and adjustment reaction disorder were the most frequent Axis I diagnoses; Mixed, Anxious/tense, and Over-involved on Axis II. Parental psychopathology was by far the most common psychosocial stressor in both samples, followed by marital conflict. More variation was found for the other

diagnoses on each axis. It is to note that the smaller sample (the 113 infants group) was also the first group of patients referred and treated at our Unit that was just being opened. Both the referring nurses and the team were quite new in the field, and since then, we have had some more training. Therefore, we suggest that the five-year findings may reflect a more accurate overall picture than the first two-years one.

Two findings emerged from the comparative part of the study. First, there were significant differences in the quality of the mother–infant interaction between referred infants with socioemotional symptoms to nonreferred normally developing infants. Interactive patterns of referred dyads were significantly less optimal than those of nonreferred dyads of the same age, background, and community. These differences emerged in both maternal, infant, and dyadic interactive behaviors. Second, the vast majority of cases who had been given a DC: 0–3 diagnosis on Axis II (27 out of 30), based on the clinical global impression and the PIR-GAS, also received a high score on maladaptive parent–child interaction, as coded independently (both in terms of coder and coding system).

These research findings had several implications for our clinical work at the Unit. First, it indirectly validated the referral training we provided to the community nurses: the symptoms for referral turned out to reflect significant problems in the infant and/or parents' functioning. Second, it strengthened our approach to use both categorical (such as DC: 0–3) and dimensional tools (such as the described coding system for parent–infant interactions) for the conceptualization of our cases. Indeed, the DC: 0–3 diagnostic profile based on the five axes indeed reflects an initial effort to overcome the categorical approach of the DSM-IV and ICD 10 classifications; still, it is based on the concept of disorder defined by the degree, the intensity and the duration of dysfunctional patterns of behaviors (either of the infant, the dyad, or both). The combined use of categorical and dimensional tools in a clinical setting such as ours, is doubly helpful: the former is needed to make priority decisions in terms of treatment policies, comparative site studies and data base collection, the latter can be helpful in defining specific goals of therapy (e.g., to increase the infant's level of initiation during his/her interaction with his/her parent, might be an important goal in itself, knowing the role of initiation in the infant's emotional development, regardless of the presence of a relational disorder).

At present, we are in the process of enrolling referred infants and parents (not the same ones studied for their interactive patterns) in a follow-up study. The main goal of this study is to examine the nature of change that follows treatment at the Unit and its correlates. Some 40 families have been already involved in this follow-up, and infants (9–36 months) and parents have been diagnosed with the DC: 0–3 system and referred to a four- to eight-month parent–infant psychotherapy. Prior to treatment, mother–infant feeding and play interaction are videotaped at home and at the clinic, infant's developmental level, mother's representation of her infant, maternal psychopathology, family functioning are assessed. Our main therapeutic approach is Lieberman's model of psychodynamic-oriented parent–infant psychotherapy (Lieberman, Silverman, & Pawl, 2000) with the emphasis on positive transference, especially with the difficult-to-engage families. Five months after the beginning of therapy, infant and mother are reassessed on some of the measures, including the infant's symptomatology, mother's perception of her child, and mother–infant play interaction. In addition to the longitudinal data, the study will provide important information on the relations between the DC: 0–3 classification, maternal psychopathology, and family functioning at the time of the first evaluation.

## CONCLUSIONS

Despite the limitations pointed out above, we do find the DC: 0–3 a useful tool for formulating our clinical cases in sound concepts, for planning interventions and research protocols and for

communication between multidisciplinary professionals. Still, improvement of the guidelines for diagnosing the different categories is much needed, and might be triggered by the accumulation of comparative data from various infant mental health units.

## REFERENCES

- American Association of Child and Adolescent Association Official Action. (1997). Practice parameters for the psychiatric assessment of infants and toddlers (0–36 months). Supplement to *Journal of the American Academy of Child and Adolescent Psychiatry*, 36(10), 210–360.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Caldwell, B.M., & Bradley, R.H. (1979). *Home observation for the measurement of the environment*. Little Rock: University of Arkansas.
- Feldman, R. (2000). Parents' convergence on sharing and marital satisfaction, father involvement, and parent–child relationship at the transition to parenthood. *Infant Mental Health Journal*, 21, 176–191.
- Feldman, R., Greenbaum, C.W., Mayes, L.C., & Erlich, H.S. (1997). Change in mother–infant interactive behavior: Relations to change in the mother, the infant, and the social context. *Infant Behavior Development*, 20, 153–165.
- Grossman, F.K., Eichler, L.W., & Winikoff, S.A. (1980). *Pregnancy, birth and parenthood*. San Francisco: Jossey-Bass.
- Heinicke, C.M. (2000). Prebirth parent characteristics and early family development. In J.D. Osofsky & H.E. Fitzgerald (Eds.), *WAIMH handbook of infant mental health* (Vol. 3, pp. 244–267). New York: John Wiley & Sons.
- Keren, M., Feldman, R., & Tyano, S. (2001). Diagnoses and interactive patterns of infants referred to a community-based infant mental health clinic. *Journal of the American Academy of Child and Adolescent Psychiatry*, 40(1), 27–35.
- Keren, M., Fivaz-Depeursinge, E., & Tyano, S. (2001). Using the Lausanne family model in training: An Israeli experience. *The Signal*, 9(3), 1–7.
- Lieberman, A.F., Silverman, R., & Pawl, J.H. (2000). Infant–parent psychotherapy: core concepts and current approaches. In C.H. Zeanah, Jr. (Ed.), *Handbook of infant mental health* (2nd ed., pp. 472–484). New York: The Guilford Press.
- Mayes, L.C., Feldman, R., Granger, R.H., Haynes, M.O., Bornstein, M.H., & Schottenfeld, R. (1997). The effects of polydrug use with and without cocaine on mother–infant interaction at 3 and 6 months. *Infant Behavior Development*, 20, 489–502.
- Sameroff, A.J., & Fiese, B.H. (2000). Models of development and developmental risk. In C.H. Zeanah (Ed.), *Handbook of infant mental health* (2nd ed., pp. 3–19). New York: The Guilford Press.
- Sroufe, L.A. (1989). Relationships, self, and individual adaptation. In A.J. Sameroff & R.N. Emde (Eds.), *Relationship disturbances in early childhood* (pp. 70–94). New York: Basic Books.
- Stern, D.N. (1985). *The interpersonal world of the infant: A view from psychoanalysis and developmental psychology*. New York: Basic Books.
- Stern, D.N. (1995). The motherhood constellation: A unified view of parent–infant psychotherapy (pp. 11–18). New York: Basic Books.
- World Health Organization. (1988). Mental, behavioral and developmental disorders, clinical descriptions and diagnostic guidelines. In Tenth revision of the international classification of diseases (Chap. 5). Geneva: World Health Organization.
- Zero-to-Three, National Center for Clinical Infant Programs. (1994). *Diagnostic classification: 0–3 Diagnostic classification of mental health and developmental disorders of infancy and early childhood: 0–3*. Arlington, VA: Author.