Chapter 16

A comparative study of infants and toddlers treated with The Mifne Approach intervention for Autism Spectrum Disorder

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Introduction

Behavioral markers for autism spectrum disorder

Autism spectrum disorder (ASD) refers to a group of neurodevelopmental disabilities causing significant social, communicative, and behavioral difficulties. Even though ASD demonstrates great phenotypic variability and genetic heterogeneity (Abrahams & Geschwind, 2008), there are as yet no clear biological markers for ASD. Despite, the lack of biological markers for autism evidence exists for the presence of behavioral markers. Behavioral markers associated with the development of autism have been identified among infants within the first year of life (Alonim, 2004, 2007, 2011; Bauman, 2003; Bradshaw, Steiner, Gengoux, & Koegel, 2015; Courchesne et al., 2011; Pierce et al., 2011). Infants with ASD can be distinguished from typically developing infants already from 12 months based on a combination of lack of typical behaviors and the presence of atypical behaviors (Wetherby & Woods, 2008). The DSM-5 states that "symptoms are typically recognized during the second year of life (12–24 months of age) but may be seen earlier than 12 months if developmental delays are severe ..." (APA, 2013: 50). Based on increased evidence, the American Academy of Pediatrics recommends screening for ASD from 18 months (Johnson et al., 2007). However, a distinction needs to be made between the early confirmation of ASD and the assessment of infants at high risk for the diagnosis of ASD, alternatively called the prodrome of autism (POA). The POA is characterized by impairments in

the emergence of behavioral precursors associated with the development of autism (Yirmiya & Charman, 2010). Behaviors associated with the POA are expressed as a variety of clustered symptoms rather than a fixed set of diagnostic criteria.

Research into behavioral markers of ASD and its prodrome has led to a number of screening instruments being proposed from as early as 6 months of age. These include, among others, the Modified Checklist for Autism in Toddlers (M-CHAT) applied from 16 to 30 months; the Autism Observation Scale for Infants applied from 6 to 18 months; the Communication and Symbolic Behavior Scales Developmental Profile applied from 12 to 24 months; and the Early Signs of Pre-Autism Screening Scale for Infants (ESPASSI©)—the Mifne Center's screening instrument applied from 5 to 15 months, which will be described later in this chapter in greater detail.

Early treatment interventions

The earlier the diagnosis and intervention, the more likely the possibility of changing the natural history of the condition into fully fledged ASD at an age when the infant's brain is undergoing rapid change and development (Alonim, 2004, 2007; Elsabbagh & Johnson, 2007, 2010; Massie, 2007; Rogers, 1996). Intervention already at the age of 12 months can potentially positively transform the predicament and future of many children and their families (Pierce et al. 2011).

The clinical utility of early screening is contingent on the availability of effective therapeutic interventions. A number of treatment interventions for infants and toddlers with ASD are available in the wider community, including those which integrate behavioral (ABA), naturalistic and developmental approaches (Bradshaw et al., 2015; Chawarska, Klin & Volkman 2008). These so-called Naturalistic Developmental Behavioral Interventions include, for example, the Early Start Denver Model (ESDM) (Rogers & Dawson, 2010) and Pivotal Response Treatment (PRT) (Koegel & Koegel, 2012). The Denver model is a developmentally and relationship-based intervention approach for young children with autism. Interventionists employing the Denver model promote development in areas known to be related to autism and follow sequences of development for children without developmental delays. In addition, interventionists focus on establishing an affectively warm and rich social environment to foster positive relationships between children and adults while encouraging children's learning (Vismara & Rogers, 2008). PRT aims to increase communication, language, and play by incorporating motivational variables during natural conditions, closely resembling how children without developmental delays learn new skills (Koegel et al., 1999; Koegel & Koegel, 2012). As with behavioral therapies, most developmental and integrative approaches have been developed for older children and modified for infants at risk or diagnosed with autism below the age of 2 years. An exception is the Mifne Approach, a psychodynamic-based intervention directed at infants and toddlers till the age of 2 years, as well as their nuclear families. Infants and

toddlers accepted for treatment with the Mifne Approach intervention either have a diagnosis of ASD or an assessment of being at high risk of ASD—the POA. The therapeutic intervention is characterized by its focus on attachment theory and family systems therapy and consists of three stages: 1. intensive residential family treatment intervention; 2. aftercare treatment in the family home; and 3. integration of the toddler in kindergarten.

Evidence of effectiveness

There exist at present only a few published studies analyzing the evidence-based efficacy of early treatment interventions for infants with autism. Until recently, published intervention research for infants with ASD below the age of 2 has been limited to a few studies that rely on description and qua-siexperimental designs (Alonim, 2004; Wetherby & Woods, 2006; Zwai-genbaum, 2009). In their metaanalysis, Bradshaw et al. (2015) identified nine studies that investigated the effectiveness of very early intervention before 24 months. Three of these studies examined intervention in the first year, while the remaining six studies focused on infants receiving treatment during the second year of life. Only one of the reviewed nine studies demonstrated clear efficacy of a specific intervention, the ESDM. Infants included in this study ranged from between 18 and 30 months in siblings of children with ASD. This randomized controlled study of the ESDM over a period of 2 years indicated significant improvements in IQ, language, adaptive behavior, and autism diagnosis for infants treated (Dawson et al., 2010).

The British Pre-school Autism Communication Trial, or PACT, which ran from 2006 to 09, is another recently published study analyzing the effectiveness of intervention among toddlers and young children (Green et al, 2013, 2015). PACT is a randomized controlled trial of a parent-mediated social communication intervention for children aged 2—4 years with core autism. Rather than intervening directly with the child diagnosed with autism, PACT used a video-aided intervention to optimize parent interactive behaviors to enhance the parent—child dyadic interaction, with the idea of improving their child's level of communication and improving related behavioral symptoms. The parent intervention consisted of 12 two hourly therapy sessions over a duration of months, followed by monthly support and extension sessions for a further 6 months. The initial published results of the PACT study has showed sustained improvement in child autism symptoms and social communication with parents, which remained at nearly 6 years after the end of treatment.

Aim of study: comparison of two groups treated with The Mifne Approach intervention

This study compares the progress of two groups of infants and toddlers who received treatment with The Mifne Approach intervention. The first group

consisted of 39 toddlers aged 24—36 months treated from 2007 to 10 and the second group consisted of 45 infants aged 12—24 months treated from 2010 to 13. The Mifne Approach intervention, which will be described in more detail below, was initially developed for toddlers up to 36 months; and since 2007 has been subsequently refined as a treatment intervention for infants up to 24 months. A key component of The Mifne Approach is the emphasis on including the whole nuclear family in the therapeutic intervention. This study is singular in only including infants and toddlers from 12 months who either have a diagnosis of ASD or have been assessed at high risk for autism. Two of the infants included in this study were siblings of children with ASD. However, in studying directly an infant and toddler population diagnosed with ASD or assessed at high risk for autism, this study does not analyze siblings of children with ASD as a special high-risk population in its own right (cf. Yirmiya, Gamliel, Shaked, & Sigman, 2007; Zwaigenbaum et al., 2007).

The Mifne Approach intervention program

Introduction

For more than three decades, the Mifne Center has pioneered the treatment of toddlers with autism. Following a long period of internal research, the Mifne Center started in 2007 to treat infants from 12 to 24 months, together with their nuclear families. Depending on their age and severity of presentation, these infants either have a diagnosis of ASD or suspected as being high risk for the diagnosis of ASD. The therapeutic approach at the Mifne Center is based on attachment theory (Bowlby, 1969) and family therapy. Attachment theory informs the therapeutic approach since while not all attachment disorders in infants presage the development of autism, most autistic disorders involve an attachment disorder in different ranges of severity. At the Mifne Center, the nuclear family has a focal role in the therapy. A family is an independent unit that undergoes internal dynamic processes by means of each one of its components and the sum of the interaction between them (Bollas, 1987; Minuchin, 1978). Because autism may influence each of the family members, experience in this field shows that therapeutic intervention in the dynamic processes of the family, and the acquisition of coping skills can lead to significant changes in their mutual relationships. The Mifne Center provides supportive therapy for each family member in addition to the direct treatment intervention for the infant with autism.

Three-stage treatment framework

The Mifne Center provides a three-stage treatment framework:

1. Three-week intensive treatment intervention for the infant involving family therapy.

2. Aftercare treatment in the family home under supervision.
3. Integration in kindergarten with accompanying supervision.

Therapeutic approach

The therapeutic staff include experts from the fields of medicine, psychology, psychotherapy, family therapy, and infant development who have been specially trained to work with the Mifne Approach treatment intervention. The therapeutic approach is holistic and combines mental, sociopsychological, and environmental aspects. The program encompasses the entire nuclear family, because the parents are the main resource for their children and are especially important in helping to promote their children's development during the stages of early infancy. The treatment program focuses on the entire range of the infant's developmental components—physical, sensory, motor, emotional, and cognitive. The core intervention for the infants is a method developed to help the infant discover the sense of self and the pleasure of human contact. As Daniel Stern (1985) describes the main phases in the process of the development of the self in fact occur during the first year of life within the context of the mother—child relationship. Yet, development of the self is one of the core impairments in the phenomenon of autism (Alonim, 2013). The goal of the treatment is to enable the growth of self-confidence, trust, and to stimulate the infant's motivation to engage in social interaction.

The playroom

The playroom forms the center of the treatment intervention on which all others revolve. The infant becomes involved in playful interaction with a therapist and/or parents in a playroom 7 days a week for generally 8 h a day. The therapists also observe the parents interacting with their infant in the playroom and provide individualized feedback and training to the parents regarding their playful interaction with their infant. Parental participation in the playroom and the feedback resulting from this process comprises a large part of the therapeutic intervention.

Three components of Reciprocal Play Therapy

The Mifne Approach treatment intervention incorporates a method of play specifically devised for infants and toddlers with autism or its prodrome, called Reciprocal Play Therapy (RPT). RPT consists of three components, which may occur in parallel, i.e., "attractive play," "sensory play," and "cognitive play."

a. Attractive play: This occurs, for example, when the therapist or parent attracts the infant's attention with a favorite toy or object. When the infant

tries to grasp the favored object, he may also pay attention to the therapist or parent, thereby establishing trust and mutual enjoyment.

b. Sensory play: This occurs when the therapist or parent gradually touches the infant, gives him hugs or massage, or takes him into her hands and attempts to make him feel at ease as much as possible. Often this sensory stimulation leads to new expressions of feelings and emotions, for example, through smiling or crying.

c. Cognitive play: The focus is in developing basic cognitive skills such as searching for a missing part of a toy, placing blocks together to build a tower, looking at a book, etc.

The play therapy is a cumulative process whereby every stage integrates elements from the previous ones. Through experiential play, the infant develops an interactive play repertoire and thereby develops at his own pace.[1] Initially, the infant's initiatives guide the therapist's attempt to develop reciprocal interaction with the expectation that a more natural attachment will develop between the infant and the parents.

Development of therapeutic strategies

During a typical RPT session a therapist may initiate playful interaction in three stages, which may occur gradually or simultaneously: firstly, close observation of the infant's behavior; secondly, engaging; and thirdly, initiating a playful interaction. The therapist's empathic interaction with the infant forms the basis of developing trust that will also inform the triadic therapeutic relationship developing between therapist, parents, and their infant during the course of the treatment intervention. Every therapeutic encounter is both highly structured following defined clinical guidelines and allows for real-time improvisation, the therapist responding to a specific action or behavior by the infant in a particular moment. The specific playful interaction will be tailor-made for the particular infant as determined by the clinical team together with the parents. A daily therapeutic schedule is developed during the treatment according to the specific needs and habits of the infant. The daily schedule can be described as a combination of containment and flow within a highly structured therapeutic environment. Incremental adjustments to the daily routine are slowly incorporated to meet identified therapeutic goals. Rather than a specific technique, the therapist seeks to establish a fluid empathic connection or dyadic state of attunement with the infant (Stern, 1985). The multidisciplinary nature of the therapeutic team means that

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1. For the sake of simplicity, we have chosen in this chapter to refer to infants in the male gender and therapists in the female gender. This reflects the prevalence of boys than girls presenting for treatment with early signs of autism, and the predominantly female gender of therapists working at the Mifne Center.

different kinds of empathic relationships will be fostered. Similarly, different kinds of neurodevelopmental stimulation will emerge through the play therapy. For example, helping the infant to slide down an elevated ramp — to cite one example of play from the many play possibilities that may arise — may stimulate touch, sensory—motor coordination, social interaction, trust, joint attention, delayed gratification, cognition, etc.

Parental participation

Parental participation in therapy is a core component of the therapeutic intervention. Parents are empowered to ask themselves questions at each step of the therapeutic intervention to enable them to find their own answers to their dilemmas (Bollas, 1987). Parents may view the therapeutic interaction through a one-way mirror. Personalized feedback sessions are provided to the infant's parents to facilitate their internalization and implementation of therapeutic insights and behaviors in their daily lives. All the therapy sessions are filmed. This documentation is an integral part of the work in the playroom. The material is an educational resource for parental feedback, staff training, and for research conducted at the Mifne Center. Treatment continues at home with counseling and supervision on a regular basis by the Center's clinical staff.

Methods

Participants

The current study followed the progress of two groups treated at the Mifne Center:

a. 39 toddlers aged 24—36 months treated between the years 2007—10.
b. 45 infants aged 12—24 months treated between the years 2010—13.

Assessment for ASD

Both groups were referred by various medical clinics as well as through self-referrals. Because the participants were first diagnosed in different locations and there was no standardization of diagnostic tools, all of them were reassessed externally using various early assessment screening scales depending on the age of the infant or toddler. The three screening scales used for assessment of infants and toddlers for autism and its prodrome in this study included the Mifne Center's diagnostic screening scale ESPASSI©, the M-CHAT, and the Autism Diagnostic Observation Scale (ADOS). (As mentioned previously, the ESPASSI© is applied from 5 to 15 months, while the M-CHAT is applied from 16 to 30 months, and the ADOS is generally applied from 18 months. The ESPASSI© behavioral variables include

excessive passivity, excessive activity, lack of eye contact, lack of reaction to voice and presence of a parent, refusal to eat, aversion to touch, motor development delay, and head circumference. The M-CHAT checklist includes items designed for the following functions or precursors associated with ASD: language deficits, arousal modulation and sensory responsiveness, theory of mind, motor functions, and social/emotional development. Examples include sensitivity to noise, unusual motor movements, eye contact, and smiling in response to parent's smile, and pointing to indicate interest (Robins, Fein, Barton, & Green, 2001). Practitioners of ADOS employ various presses or activities to draw out certain types of behavior from the individual being assessed (Lord et al., 2000; Hurwitz & Yirmiya, 2014). These cover a range of skills, including social interaction, communication, and play). In the older group, all the 39 toddlers were diagnosed before treatment with ASD. In the younger group, 38 infants were diagnosed with ASD, and 7 infants were suspected to be at high risk of autism.

The daily evaluation scale analysis (DEOS)

The studied data were divided into four categories—Engagement, Communication, Play, and Functioning, which are systematically recorded in the Daily Evaluation Scale Analysis (DEOS).[2]

The DEOS is a clinical assessment scale for the analysis of reports of observations structured with variables used by therapists for the analysis of their reports following treatment sessions and has been implemented into the therapeutic program since 1996. At the end of each session, the therapist fills in a DEOS form, checking it against her experiences during the session with the infant. The data are monitored after each session, every day, from the first till the last day of therapy. Collecting the data provides insight to the therapeutic process and helps to focus on the infant's specific needs as well as capabilities. Most behavior elements are scored on a scale from 1 to 10 according to their frequency of occurrence and their quality; the numerical scores are supplemented by written verbal comments provided by therapists. The DEOS is analyzed weekly during the first intensive treatment stage and every 2 months during aftercare treatment program.

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2. The DEOS consists of 21 variables. The DEOS categories are based on behavioral symptoms related to autism. Some of these categories were adapted from the DSM-IV key criteria, the most prevalent psychiatric diagnostic criteria in use at the time the study was conducted. The other DEOS categories were derived through years of clinical experience. *The DSM-IV derived variables are marked in the text by* *, *while the variables derived independently through clinical experience are marked in the text by* **.

Clinical variables included in the study

The four categories included in this study, Engagement, Communication, Play, and Functioning, consist of different clinical subcategories or components. Engagement components include eye contact*, physical contact*, obsessions (repetitive behaviors)*, and detachment**. Communication components include pointing*, vocals*, speech*, comprehension of situation**, language comprehension*, hand-pulling*, and screaming**. Play components include curiosity**, concentration*, creativity**, and ritualistic behavior*. Functioning components include fine motor coordination*, gross motor coordination*, eating manner**, eating amount**, and hygiene*. (This last category only applied to the older group of toddlers.)[3]

Additional clinical data

Additional clinical data are derived from video records, therapist's daily reports, and parental interviews. Because all of the treatment sessions are filmed, the videos of these sessions provide a rich source of clinical data about each infant, as well as the interaction between the infant and parents. Following a treatment session, the camera operator fills in a report form, which includes the infant's name, the code of the storage system, the therapist's name, date, and time, and a short description of activities done during the session and level of interaction done during each activity. The video records provide a digital archive for researchers to reevaluate and confirm the clinical impressions registered by the therapists in the DEOS.

A descriptive narrative is written by the therapist each day during the treatment of the infant. This report is read at the end of the day by a senior therapist and is incorporated into the research data.

Parental interviews at the beginning and during the duration of the intervention provide the final source of clinical information to build a comprehensive clinical picture of the family environment, as well as infant's baseline assessment. Information provided refers, for example, to parental mental wellbeing, parental relationship, parental confidence, over protection of their children, level of stress, and level of the crisis they experienced at that stage.

Together, the video recordings, therapist reports, parental interviews provide qualitative data that inform the assessment of the four clinical categories contained in the DEOS that forms the basis of this study.

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3. Two DEOS variables not explicitly referred to in the study include acceptance of people** and initiative*. The variable of "obsessions" in the study encompasses repetitive behaviors*, assessed in the DEOS terms of frequency, affective state, and expression. The category of detachment** is unique to the DEOS, highlighting the Mifne Center's singular approach in integrating attachment in its treatment intervention for infants with autism. The DEOS variables relating to eating habits** are referred to in the latest iteration of the DSM-5.

Reducing observer bias

Although the DEOS research instrument is structured and employs formal categorization of behavior, a subjective element is involved in its completion deriving from the particular therapists' interaction with the infant during treatment intervention. The data in this study represent the summation of daily assessments by all of the therapists directly involved in the intervention. Agreement as to the DEOS scoring was obtained by the therapists reviewing the different DEOS assessments at regular intensive professional meetings during the course of a treatment intervention to track the particular infant's clinical progress. Any differences in evaluation that may arise are discussed to reach a final consensual evaluation. A significant difference of two in the DEOS scoring for a particular behavioral variable between different therapists generally indicates a problem in the evaluation that needs to be addressed, particularly through repeated video observation of the particular treatment session and recompletion of the DEOS. It is important to note that a gap of two in the DEOS scoring for a particular variable may also indicate a different therapeutic relation between the therapist and the infant receiving treatment, hence the importance of reviewing the data collectively. The clinical data analyzed in this study were reevaluated by the authors of this chapter to ensure that the evaluations were recorded consistently.

Results

T-test for independent groups

The differences in results between infants who were treated between 12 and 24 and toddlers between 24 and 36 months are seen in the following t-test for independent groups paired performed between the "pretreatment" mean and the "posttreatment" mean for each of the variables in each age group separately.

Engagement components: eye contact, physical contact, obsessions, and detachment

Table 16.1 shows the results of *t-tests* for engagement components comparing findings for two independent groups consisting of younger infants and older toddlers. The table is divided into three sections: pretreatment, posttreatment, and the difference between pre- and posttreatment. The engagement variables assessed include eye contact, physical contact, obsession, and detachment. Eye contact and physical contact are considered positive variables—positive variables refer to an improvement through the intervention reflected in higher values. Obsession and detachment are considered negative variables—negative variables refer to an improvement through the intervention reflected in lower values.

TABLE 16.1 t test for independent groups. n = 84 (45 ages 12—24 months; 39 ages 24—36 months).

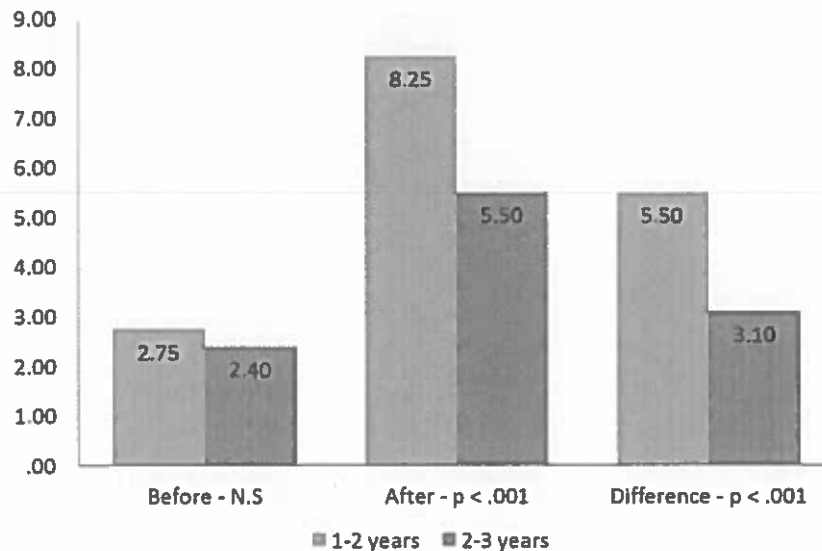| Engagement components		Ages 1—2		Ages 2—3		t
		M	S.D.	M	S.D.	
Pretreatment	Eye contact	2.00	1.07	2.00	0.95	0.00*
	Physical contact	4.00	1.41	3.00	1.52	3.12**
	Obsessions	8.00	1.09	9.00	0.97	−4.41**
	Detachment	7.00	1.51	8.00	1.00	−3.52**
Posttreatment	Eye contact	8.00	1.13	6.00	1.32	7.49**
	Physical contact	9.00	1.52	6.00	1.24	9.82**
	Obsessions	2.00	1.04	6.00	1.54	−14.09**
	Detachment	2.00	1.19	4.00	1.41	−7.05**
Difference	Eye contact	6.00	1.58	4.00	1.67	5.63**
	Physical contact	5.00	1.89	3.00	1.78	4.96**
	Obsessions	−6.00	1.65	−3.00	1.84	−7.88**
	Detachment	−5.00	1.46	−4.00	1.78	−2.83*

*$p < 0.05$.
**$p < 0.001$.

FIGURE 16.1   Difference between the pre- and posttreatment in engagement components.

At the pretreatment stage, there was no significant difference in eye contact between the two groups. For the rest of the variables, the younger group of infants showed better pretreatment indices than the group of toddlers.

Posttreatment results demonstrated dramatic clinical improvement for all of the four variables in both groups; however, the positive impact of the treatment intervention on the younger group of infants was clearly much greater than on the group of toddlers. In other words, there was a positive therapeutic effect on engagement variables in both groups, but the positive impact on the younger group of infants was clearly much greater than on the group of toddlers. This finding is even more striking when considering the delta between the two groups: these findings indicate that for all four variables the younger group of infants improved more significantly than the group of toddlers. For example, in terms of the obsession variable, the younger group of infants improved twice as much as the group of toddlers. The findings of the table are presented in the following graph Fig. 16.1.

Communication components: pointing, vocals, speech, situation comprehension, hand-pulling, and screaming

Table 16.2 shows the results of *t-tests* for communication variables comparing findings for two independent groups consisting of younger infants and older toddlers. This table is also divided into three parts: pretreatment, posttreatment, and the difference between pre- and posttreatment. The communication

TABLE 16.2 n = 84 (45 ages 12–24 months; 39 ages 24–36 months).

Communication components		Ages 1–2		Ages 2–3		t
		M	S.D.	M	S.D.	
Pretreatment	Pointing	1.00	0.95	0.00	0.00	6.54*
	Vocals	2.00	1.26	3.00	1.21	−3.69*
	Speech	1.00	0.98	2.00	1.12	−4.36*
	Situation comprehension	2.00	1.13	3.00	1.30	−3.78*
	Language comprehension	2.00	1.04	3.00	0.95	−4.57*
	Hand-pulling	6.00	1.45	7.00	1.47	−3.14*
	Screaming	9.00	1.31	9.00	1.52	0.00**
Posttreatment	Pointing	6.00	1.43	3.00	1.17	10.42*
	Vocals	8.00	1.17	6.00	1.50	6.85*
	Speech	5.00	1.41	4.00	1.36	3.29*
	Situation comprehension	7.00	1.48	6.00	1.61	2.97*
	Language comprehension	8.00	1.35	6.00	1.69	6.04*
	Hand-pulling	1.00	0.98	3.00	1.03	−9.14*
	Screaming	3.00	1.33	5.00	1.41	−6.67*

Continued

TABLE 16.2 n = 84 (45 ages 12–24 months; 39 ages 24–36 months).—cont'd

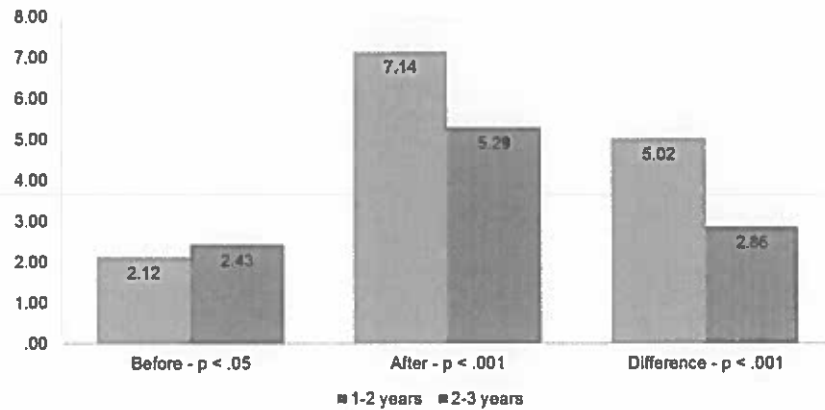| Communication components		Ages 1–2		Ages 2–3		t
		M	S.D.	M	S.D.	
Difference	Pointing	5.00	1.64	3.00	1.17	6.35*
	Vocals	6.00	1.57	3.00	2.00	7.70*
	Speech	4.00	1.76	2.00	1.88	5.04*
	Situation comprehension	5.00	2.11	3.00	1.79	4.64*
	Language comprehension	6.00	1.71	3.00	1.92	7.59*
	Hand-pulling	−5.00	1.80	−4.00	1.69	−2.62**
	Screaming	−6.00	1.71	−4.00	1.95	−5.02*

*p < 0.001.
**p < 0.05.

FIGURE 16.2 Difference between pre- and posttreatment in communication components.

variables assessed include hand-pulling, screaming, pointing, vocals, speech, and situation comprehension. Hand-pulling and screaming are negative variables—negative variables refer to an improvement through the intervention as reflected in lower values. Pointing, vocals, speech, and situation comprehension are positive symptoms—positive symptoms refer to an improvement through the intervention as reflected in higher values.

At the pretreatment stage, there was no significant difference in screaming between the two groups. For two variables, pointing and hand-pulling, the younger group of infants showed better indices at this stage than the group of toddlers.

This situation changed significantly following treatment. Both groups exhibited an improvement in all variables without exception; however, the younger group of infants clearly improved more significantly than the group of toddlers. In other words, there was a positive therapeutic effect on communication variables for all infants in both groups, but the positive impact on the younger group of infants was clearly much greater than the group of toddlers. This finding is even more striking when considering the delta between the two groups: these findings indicate that for all four symptoms the younger group of infants improved more significantly than the group of toddlers, despite the toddler group's better starting point. The findings of the table are presented in the following graph Fig. 16.2.

Play components: curiosity, concentration, creativity, and ritualistic

Table 16.3 shows the results of *t-tests* for play variables comparing two independent groups consisting of younger and older infants. This table is also divided into three parts: pretreatment, posttreatment, and the difference between

TABLE 16.3 n = 84, (45 ages 12–24 months; 39 ages 24–36 months).

| Play components		Ages 1–2		Ages 2–3		
		M	S.D.	M	S.D.	t
Pretreatment	Curiosity	2.00	1.02	2.00	1.05	0.00*
	Concentration	1.00	0.93	2.00	1.21	−4.27**
	Creativity	1.00	0.90	2.00	1.28	−4.18**
	Structured/Ritualistic	7.00	1.19	9.00	1.65	−6.43**
Posttreatment	Curiosity	7.00	1.21	5.00	1.24	7.49**
	Concentration	6.00	1.40	5.00	1.05	3.66**
	Creativity	6.00	1.48	4.00	1.50	6.14**
	Structured/Ritualistic	2.00	1.17	5.00	1.32	−11.06**
Difference	Curiosity	5.00	1.55	3.00	1.67	5.69**
	Concentration	5.00	1.73	3.00	1.47	5.66**
	Creativity	5.00	1.91	2.00	1.79	7.39**
	Structured/Ritualistic	−5.00	1.72	−4.00	2.04	−2.44*

*p < 0.05.
**p < 0.001.
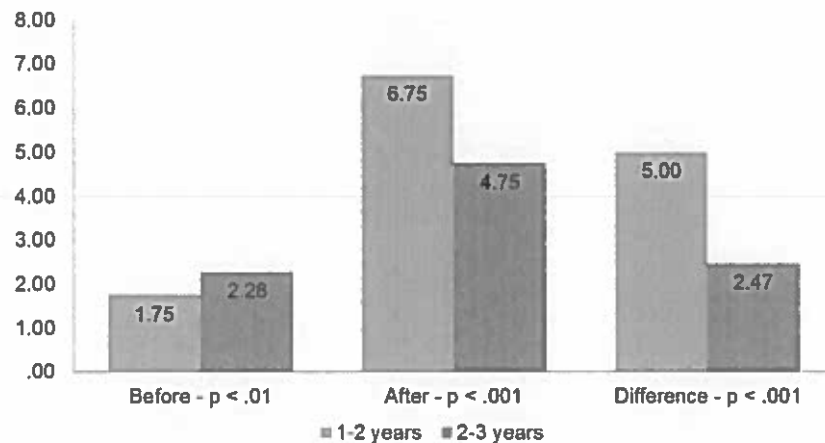
FIGURE 16.3 Difference between pre- and posttreatment in play components.

pre- and posttreatment. The play variables assessed include curiosity, concentration, structured, creativity, and structured/ritualistic play. Curiosity, concentration, and creativity are considered positive variables—positive variables refer to an improvement through the intervention reflected in higher values. Structured/ritualistic plays are considered negative variables—negative variables refer to an improvement through the intervention reflected in lower values.

At the pretreatment stage, there was no significant difference in curiosity between the two groups. For structured/ritualistic play, the younger group of infants showed better indices than the group of toddlers. For two variables, concentration and creativity, the group of toddlers demonstrated clearly better indices than the younger group of infants.

This situation changed significantly posttreatment. In other words, there was a positive therapeutic effect on play variables for all infants in both groups, but the positive impact on the younger group of infants was clearly much greater than the group of toddlers. This finding is even more striking when considering the delta between the two groups. These findings indicate that for all four symptoms, the younger group of infants improved more significantly than the group of toddlers, despite the toddler's group better starting point. The findings of the table are presented in the following graph Fig. 16.3.

Functioning components: fine motor, gross motor, eating manner, eating amount, and hygiene

Table 16.4 shows the results of *t-tests* for functioning variables comparing two independent groups consisting of younger and older toddlers. This table is also divided into three parts: pretreatment, posttreatment, and the difference

TABLE 16.4 (45 ages 12–24 months; 39 ages 24–36 months).

Functioning components		Ages 1–2		Ages 2–3		
		M	S.D.	M	S.D.	t
Pretreatment	Fine motor	1.00	0.98	3.00	1.26	−8.20*
	Gross motor	3.00	1.19	5.00	1.28	−7.43*
	Eating manner	1.00	1.04	1.00	0.95	0.00**
	Eating amount	2.00	1.30	2.00	1.15	0.00**
	Hygiene	0.00	0.000	0.00	0.000	
Posttreatment	Fine motor	7.00	1.24	5.00	1.03	7.97*
	Gross motor	7.00	1.24	7.00	1.10	0.00**
	Eating manner	7.00	1.37	5.00	1.17	7.15*
	Eating amount	8.00	1.28	6.00	1.00	7.89*
	Hygiene	1.00	0.90	3.00	0.97	−9.76*
Difference	Fine motor	6.00	1.69	2.00	1.41	11.65*
	Gross motor	4.00	1.77	2.00	1.75	5.19*
	Eating manner	6.00	1.89	4.00	1.75	5.00*
	Eating amount	6.00	1.93	4.00	1.65	5.06*
	Hygiene	1.00	0.90	3.00	0.97	−9.76*

*$p < 0.05$,
**$p < 0.001$.

between pre- and posttreatment. The functioning variables assessed include fine motor, gross motor, easting manner, eating amount, and hygiene. Obviously, toddlers above the age of 24 months are more advanced in terms of motor skills than infants between 12 and 24 months. In this section, all of the variables were positive—positive variables refer to an improvement through the intervention reflected in higher values.

At the pretreatment stage, there was no significant difference in the variables associated with eating, i.e., eating manner and eating amount between the two groups. In terms of the other motoric symptoms, fine motor movements and gross motor movements, the group of toddlers demonstrated clearly better indices than the younger group of infants.

This situation changed significantly following treatment. Both groups exhibited an improvement in all variables without exception; however, the younger group of infants clearly improved more significantly than the group of toddlers. In other words, there was a positive therapeutic effect on functioning variables for all infants in both groups, but the positive impact on the younger group of infants was clearly much greater than on the group of toddlers. This overall finding is even more striking in considering the delta between the two groups. These findings indicate that for all four variables, including gross motor movements, the younger group of infants improved more significantly than the group of toddlers. For the component of gross motor movement, there was no posttreatment difference between the two groups. However, the starting point for the group of infants (3.00) was well below that of the toddler group (5.00). The findings of the table are presented in the following graph Fig. 16.4.
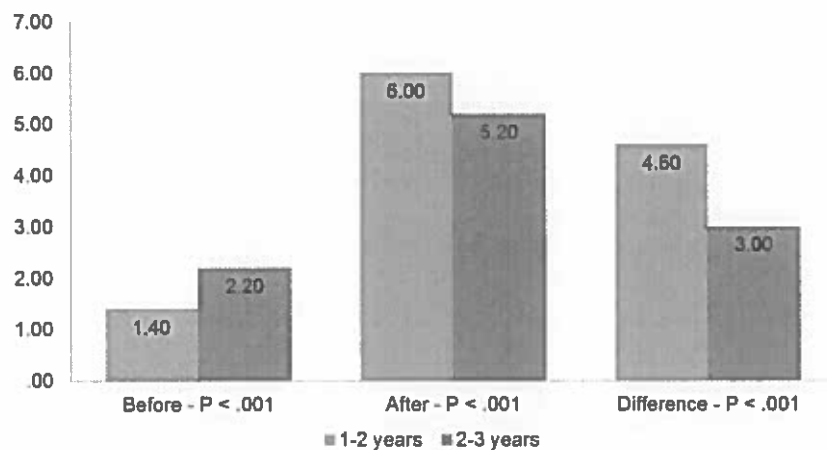

FIGURE 16.4   Difference between pre- and posttreatment in functioning components.

Discussion and implications

Summary

This study compares the results of treatment with The Mifne Approach intervention on two groups of infants and toddlers between the ages of 12—24 months and 24—36 months.

The development of The Mifne Approach intervention predates most other current approaches for infants with the POA below the age of 2 years. It provides an initial "high intensity" treatment for the infant and family, continued up by "low intensity" aftercare treatment. It is singular in terms of providing a psychotherapeutic intervention for the whole family, including parents and siblings of infants with autism. Parents undergo close observation by the Mifne Center's clinical team and receive feedback regarding their interaction with their infant. Parents receive hands-on training during the interaction with their infant in the playroom to develop interactive skills.

Attachment theory

The Mifne Approach intervention emphasizes attachment theory as a key theoretical foundation of its approach. It builds its treatment strategy in promoting neurodevelopment in areas related to autism modeled on typical infant development. It is also naturalistic in building on the particular characteristics of each family, and infant. The intensive therapy intended to provide an intense intervention to facilitate a therapeutic breakthrough that the infant and family can build on following the treatment intervention.

Family system intervention

The Mifne Approach is holistic, taking into consideration all the aspects of the infant's development, e.g., the level of their physical, sensory, emotional, and cognitive development; the level of attachment and self-development; eating and sleeping habits; motor skills; and play and speech. These aspects are the basic components from which The Mifne Approach intervention is constructed. Moreover, the emphasis on whole family intervention means that the family psychological constellation can be contained and adapt along with the neurodevelopmental changes and improvements that occur in the infant during a typical intervention.

Comparative results between two groups

This study provides the first study comparing the effects of intervention with the Mifne Center method for a group of infants between 12 and 24 months and a group of toddlers between 24 and 36 months. Although both groups of infants benefited from The Mifne Approach intervention, the younger group

demonstrated more significant improvements across all measured variables, including components for engagement, communication, play, and functioning.

These findings were observed even in relation to variables where the infants aged 12—24 months showed more severe age-appropriate pretreatment signs of ASD than the older group of toddlers aged 24—36 months, including components of communication (vocalization, speech, situation comprehension, and language comprehension—see, Table 16.2), play (concentration and creativity—see Table 16.3), and functioning (fine motor activity—see Table 16.4). This study also highlights the therapeutic benefits of treatment intervention from as early as 12 months in severe cases, when the precursor behaviors associated with the POA may be first detected.

Epistemic limitations

Despite the significant results demonstrated by this study, there are a number of epistemic limitations that need to be born in mind.

Firstly, because of their young age, seven of the infants below 18 months screened with ESPASSI© and M-CHAT fall in the category of high risk for autism, or the POA, rather than the full diagnosis of ASD. It is possible that some of these high-risk infants may have other comorbidities in addition to ASD, though this is unlikely, since none were elicited during the study and follow-up communication with the parents of the study participants. This study indicates that the earlier the intervention in infancy, the greater likelihood of achieving a therapeutic impact on the outcome of ASD. The success of early intervention in altering the natural progress of the condition presents the catch-twenty-two situation, whereby it may not be possible to know with certainty whether these infants would have been diagnosed with ASD if they had not received the treatment intervention. Nonetheless, the symptoms these infants presented with were related to autism characteristics (e.g., avoiding eye contact, avoiding parents' presence) and the infants were treated accordingly. Relatedly, it is also important to bear in mind that the purpose of this study is not to analyze the effect of a treatment intervention on the diagnosis of autism, but on the improvement of component variables associated with autism in infancy and toddlers. As such, the authors analyzed the differences in improvement for clinical variables pertaining to engagement, communication, play, and functioning in these two groups of infants and toddlers who each received an early treatment intervention. Examined in terms of age-appropriate developmental levels, the results of this study are highly suggestive for the efficacy of intensive treatment intervention for infants at high risk for autism from 12 months of life.

Finally, the categories evaluated in this study refer to assessment of observations of structured variables by the Mifne Center therapists during an intervention. This introduces a necessarily subjective element into this research. Means to reduce inconsistencies among therapists in capturing data

have previously been described in the methodology section. It is important to stress that the subjective element in recording the clinical variables following a particular treatment is a necessary component of the therapeutic approach at the Mifne Center. Nonetheless, clinical data from the DEOS, videos, therapist reports and parental interviews provide an objective means of measuring and evaluating the infant's neurodevelopmental transformation, including affective and autistic behaviors, during the course of a treatment intervention. More important than any single evaluation is the assessment of clinical transformation over time by a number of therapists and researchers for all of the clinical categories examined. Analysis of this clinical data is reliant on a certain level of professional expertise and experience working with infants and autism.

Conclusion

This study evaluated two groups of infants and toddlers with autism treated with The Mifne Approach intervention. Both groups demonstrated significant improvement in terms of variables related to autism, including eye contact, expression of needs by means of pointing, pulling hands or noises, speech or speech sounds, comprehension of language, game behavior, physical contact, and eating. The group of infants between 12 and 24 months demonstrated significantly greater improvement than the group of toddlers between 24 and 36 months, affirming the emphasis on intervention with infants from between 12 and 24 months of age. The findings of this study support the research trend emphasizing early diagnosis and treatment for infants with autism and suggest that early detection of autism can and should take place around the age of 12 months to be followed by early treatment. Assessment of the POA at this early age is not clear-cut but is established through analyzing a variable constellation of symptoms regarding precursor behaviors associated with the development of autism. The therapeutic intervention for infants with the POA navigates a necessary tension between a therapeutic imperative and epistemic uncertainty. In conclusion, it is important to bear in mind that each infant with autism and each individual family is unique. Focal treatment is ultimately given to the infant and not to the diagnosis.

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