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Regular Article

Mothering from the Inside Out: Adapting an evidence-based intervention for high-risk mothers in the Western Cape of South Africa

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Abstract

During South Africa's first two decades as a democracy, the Western Cape Province has undergone radical changes to its healthcare system in an effort to address the extensive socioeconomic inequities that remain in the aftermath of the apartheid era. Although progress has been made, there is a clear need for interventions that support parents and children receiving health services in the public sector who are vulnerable to multiple psychosocial risks associated with extreme poverty. In this mixed-method study, we examined the feasibility and acceptability of adapting an evidence-based parenting intervention called Mothering from the Inside Out that was developed for mothers who are vulnerable to similar risks in the United States. Using qualitative methods, we documented the collaborative process that was guided by principles of community-based participatory research and examined themes in the Western Cape collaborators' perspectives about the feasibility and acceptability of the intervention. Using quantitative methods, we tested the preliminary efficacy of the adapted version of Mothering from the Inside Out for improving maternal reflective functioning and mother–child interactions. Although findings from both study components indicated preliminary promise, a number of obstacles and challenges at multiple levels underscore the need for (a) flexibility and contextual support for intervention research conducted in under-resourced communities, (b) clinical sensitivity to the unique experiences of parents rearing children in highly stressful, under-resourced environments, and (c) equal partnerships that allow the expertise of local providers to inform the design proposals of consulting investigators.

Keywords: parent intervention, implementation research, community-based participatory research, maternal addiction, maternal mental illness

During South Africa's first two decades as a democracy, the Western Cape Province has undergone radical changes to its healthcare system in an effort to address the extensive socioeconomic inequities that remain in the aftermath of the apartheid era. Although progress has been made, there is a clear need for interventions that support parents and children receiving health services in the public sector who are vulnerable to multiple psychosocial risks (e.g., mental illness, substance abuse, and physical injury) associated with extreme poverty. In this mixed-method study, we examined the feasibility and acceptability of adapting an evidence-based parenting intervention called Mothering from the Inside Out (MIO) that was developed for mothers who are vulnerable to similar risks in the United States. MIO is a time-limited therapeutic intervention designed to enhance maternal reflective functioning (the mother's capacity to make sense of her own emotions and to understand her child's emotional needs within an attachment framework). Using qualitative methods, we documented the collaborative process within the sociocultural context of the Western Cape and examined themes in the Western Cape collaborators' perspectives about the feasibility and acceptability of the intervention. Using quantitative methods, we tested the preliminary efficacy of the adapted version of MIO for improving maternal mentalizing capacity and mother–child interaction quality. In what follows, the rationale for this collaboration is first grounded within the context of the Western Cape's recent history of health service reform. Next, we explain the need for interventions that broadly target psychosocial risks in the context of poverty. An overview of the MIO intervention and its evidence base follows. Finally, the approach for adapting the intervention is described. In the next section, the qualitative study is presented, beginning with a timeline and description of the collaborative process followed by results of a thematic analysis of participating treatment providers' perspectives about the feasibility and

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acceptability of the intervention within the local cultural context. In the following section, the quantitative study is presented in a conventional format (i.e., hypotheses, recruitment procedures, sample characteristics, measures, and results). Finally, in the Discussion we explore the implications of the qualitative and quantitative findings combined for future intervention and research development.

Healthcare Reform in the Western Cape Province

In 1994, when South Africa became a democratic nation, public healthcare was fragmented between multiple authorities along racial lines such that private healthcare largely targeted the higher income White population leaving the lower income non-White population in the care of the already burdened public sector tertiary hospitals (Gilson et al., 2017). In comparison with other South African provinces, the Western Cape had the advantage of entering the post-apartheid period with an intact, well-functioning bureaucracy and a legacy of socioeconomic advantage (Gilson et al., 2017). In 1995, healthcare reform in the Western Cape Province was initiated in the form of a Provincial Health Plan that involved reorganizing primary healthcare services. More recent initiatives (e.g., Healthcare 2030) have involved promoting patient-centered care, illness prevention, and health promotion, and a focus on addressing social determinants of healthcare. Underpinning the Healthcare 2030 initiative is a movement to rethink the role of academic hospitals and improve the relations between the Provincial Department of Health and universities and clinicians. This initiative means that university hospital staff and clinicians have become more involved in community initiatives with an aim of making the healthcare system less divided and more equal, so that decent facilities are available to the poor (Gilson et al., 2017). The first formal evaluation of the Western Cape Provincial health system, a qualitative evaluation conducted by a group of Western Cape provincial health managers and researchers (Gilson et al., 2017), reported on the health system reconstruction experiences of the 1994–2016 period through the perspectives of 73 key health-system stakeholders. Findings from this evaluation showed that spending in the Western Cape on public healthcare and that health system changes led to more antenatal care, with first visits before 20 weeks gestation increasing from 39% in 2005 to 66% in 2014. At the same time, despite these improvements, the Western Cape was still experiencing disparities in infant and under age 5 mortality across districts. There was also lingering concern that the public healthcare model remained bound by an acute-care service-delivery model (characterized by care in tertiary hospitals) that was not well oriented to supporting wider action to address the social determinants of health. The respondents in the evaluation study believed that reorienting the public healthcare model would require confronting the dominance of the biomedical perspective and the "compliance culture," where innovative strategies are viewed as threatening and therefore discouraged. Related to this issue was a widely perceived failure to establish functioning processes for engaging the community in reform. The Provincial Department of Health had been criticized for relying too much on formal legislation and too little on conversations with community healthcare constituents needed to bring reform alive and build trust within the community.

Taken together, the historical context of healthcare reform progress and shortfalls points to the Western Cape as an ideal location for a collaboration of mental health professionals from university-affiliated tertiary hospitals serving the public sector that aims to address the parent–child relationship, a critical social determinant of health and potential buffer for the impact of stress exposure on children's health. This effort would be consistent with provincial aims to eliminate healthcare disparities by engaging university-affiliated hospitals and community healthcare constituents in an equal partnership to develop innovative services. If successful, the already developed healthcare infrastructure could support the dissemination of the innovative service.

Psychosocial Risk Factors for Mothers and Children Living in the Context of Poverty in South Africa

Even after two decades of democracy, a majority of the South African population continues to live in poverty, with additional social problems such as unemployment, substance abuse, mental illness, and exposure to violence and crime (Roman, Makwakwa, & Lacante, 2016). Poverty, by definition, reduces the ability of parents to provide adequate nutrition and to access good educational opportunities for their children on a consistent basis necessary for health development. Poverty also increases the stress that parents experience when trying to provide for and protect their children, and makes emotionally distant, harsh, and inconsistent parenting more likely (Bray, Gooskens, Kahn, Moses, & Seekings, 2010; Kotchick & Forehand, 2002; Roman et al., 2016; Ward, Makusha, & Bray, 2015). The basic difficulties of everyday life encountered by low-income South African adults generate a condition of chronic stress that is itself a predictor of both poor physical and mental health (BeLue, Schreiner, Taylor-Richardson, Murray-Kolb, & Beard, 2008). In the context of poverty, poor South Africans face intersecting epidemics of mental illness (e.g., depression and anxiety), substance abuse, malnutrition, fetal alcohol syndrome, and human immunodeficiency virus (HIV; Tomlinson et al., 2014). Maternal depression rates are as high as 35% in many communities. Low birth weight and poor nutrition in children are also associated with high mortality rates and substantial life-long impairment in neurocognitive and socioemotional development (Tomlinson et al., 2014). No single risk factor predominates, though, in a way that might suggest a vertical disorder-targeted model of intervention. For example, in one study with 1,145 pregnant Xhosa women living in 24 informal settlements (formerly known as townships), Tomlinson et al. (2014) found that 66% of pregnant women experienced at least one risk (HIV, alcohol use, low birth weight, poor nutrition, or depressed mood), and 27% experienced more than one risk factor. In another study with 376 low-income women enrolled in an urban primary care setting in Cape Town, 23% met criteria for an anxiety disorder, which, in turn, was associated with histories of multigravidity, food insecurity, unplanned pregnancy, and exposure to life-threatening events (van Heyningen et al., 2017).

Exposure to chronic environmental stress has a range of negative effects on children's cognitive, emotional, and physical development (Fearon et al., 2017; Lupien, McEwen, Gunnar, & Heim, 2009). Infants from poor communities in the developing world are especially vulnerable to social adversity and maternal mental illness because they are subject to parenting that is under the strain of both marked socioeconomic hardship and high rates of depression and substance abuse (Cooper et al., 2002). In the South African context, maternal mental illness and substance abuse have been linked with lower maternal sensitivity with infants and lower infant engagement with their mothers (Cooper et al., 2002). In the same study with Xhosa women cited above (Rotheram-Fuller et al., 2018), maternal mental illness

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from child birth to 36 months postpartum was associated with children's compromised physical growth and more internalizing and externalizing problems. More proximal, postnatal depressed mood had a larger influence on children than antenatal depressed mood.

The parent–child relationship plays a critical role in buffering the impact of early adversity on long-term stress response (Fearon et al., 2017). Specifically, early sustained exposure to environmental adversity results in a gradual, long-term muting of the hormonal stress response (i.e., activation of the hypothalamic–pituitary–adrenal [HPA] axis with the release of cortisol; Gunnar & Quevedo, 2007). When this buffering process fails, exposure to chronic stress may lead to long-term alterations in HPA functioning, which, in turn, compromise an individual's stress adaptation capacity. In one study in the Western Cape with 232 mother–child pairs living in a large informal settlement located near Cape Town, Fearon et al. (2017) found that, for 13-year-olds who were classified as having a secure attachment during infancy, there was no association between exposure to cumulative environmental stress (e.g., overcrowding, community or domestic violence, food insecurity, absence of indoor plumbing, parental unemployment, and parental relationship discord) and HPA functioning (i.e., cortisol reactivity). In contrast, for adolescents who were classified as insecure (i.e., avoidant, resistant, or disorganized) during infancy, there was a marked association between high levels of adversity exposure and HPA functioning.

Taken together, findings from research on psychosocial risk vulnerabilities incurred by mothers and children exposed to poverty in the Western Cape suggest the importance of directly addressing parenting stress experienced by mothers who are vulnerable to a wide range of psychosocial stressors (e.g., mental illness, substance abuse, and adverse child circumstances) that may compromise the mother–child relationship quality (i.e., attachment security) that provides an essential buffer that protects children's well-being from the exposure to the stresses of poverty.

Mentalization-Based Parenting Therapy: Strengthening a Mother's Resilience in the Context of Environmental Stress

One approach to intervening with mothers who have been exposed to poverty and environmental stress that compromise their psychosocial resilience (increasing vulnerability to psychosocial impairment) that has been increasingly evaluated in clinical trials involves targeting the mother's capacity for mentalizing. Mentalizing is the capacity to recognize and make sense of thoughts, intentions, and emotions in oneself and others that underlie and influence behavior (Fonagy, Steele, Steele, Moran, & Higgitt, 1991). Reflective functioning (RF) is the observable and measurable manifestation of this capacity (Fonagy, Target, Steele, & Steele, 1998). For several decades, attachment researchers were puzzled about the transmission of attachment security across generations (van IJzendoorn, 1995). Although parental caregiving sensitivity has often been considered the primary mechanism of transmission, accumulating evidence has shown this not to be the case (see Verhage et al., 2016). To address the "transmission gap," parental mentalizing has been proposed as an alternate mechanism responsible for children developing a secure attachment with a primary caregiver, and accumulating evidence has supported this claim (Fonagy et al., 1991; Shai & Meins, 2018: Slade, Grienenberger, Bernbach, Lew, & Locker, 2005). In one meta-analysis of data collected in 20 studies examining parental RF and sensitivity as predictors of infant–parent attachment, Zeegers, Colonnesi, Stams, and Meins (2017) found that parental mentalization predicted infant–parent attachment even after controlling for parental sensitivity effects, and that parental mentalization exerts both direct and indirect influences on attachment security.

Mentalization has been conceived as a form of emotional regulation that involves a developmental progression of recognizing, understanding, and managing strong emotions (Allen, Fonagy, & Bateman, 2008; Fonagy, Gergely, Jurist, & Target, 2002; Greenberg, Kolasi, Hegsted, Berkowitz, & Jurist, 2017). Support for this conception has been found in several studies reporting significant correlations between mentalizing capacity and emotional regulation (Camoirano, 2017; Gershy, 2015; Innamorati et al., 2017). Mentalizing interventions have been increasingly studied in clinical trials research and have shown promise for helping parents from populations at risk for emotional dysregulation including mothers with substance abuse disorders (Suchman et al., 2017; Suchman, DeCoste, McMahon, Rounsaville, & Mayes, 2011), mental illness (Suchman, Ordway, de las Heras Kuhn, & McMahon, 2016), and low reflective capacity (Sadler et al., 2013); incarcerated mothers (Sleed, Baradon, & Fonagy, 2013); distressed mothers seeking psychological support (Fonagy, Sleed, & Baradon, 2016); and parents of children suffering neurodevelopmental disorder (Sealy & Glovinsky, 2016).

MIO

MIO (Suchman, DeCoste, Ordway, & Bers, 2013) is a mentalization-based intervention for mothers that has demonstrated efficacy in two randomized clinical trials for improving maternal RF and mother–child interactions in samples recruited from a population of mothers in outpatient substance abuse treatment who often have co-occurring mental illness (i.e., mood disorders) and exposure to multiple traumas (i.e., extreme poverty; sexual, physical, and emotional abuse; exposure to family and domestic violence; and sudden loss of home or family members). MIO is a 12-session individual adjunctive therapy provided in tandem with other medical and/or mental health services. The aim of MIO is to support psychosocially vulnerable mothers in their capacity to manage and regulate their own strong emotions and to support their children's growing capacity for emotional regulation and secure attachment by inviting the mother to engage in the process of mentalizing. Mentalizing is thought to give an individual a better understanding and control over challenging thoughts (e.g., harsh criticism, judgment, and distortion) and emotions (e.g., fear, anger, guilt, sadness, and hopelessness) that often interfere with the capacity to recognize and respond sensitively to children's emotional needs.

In MIO sessions, the mother chooses the topic of discussion and the therapist follows the mother's lead, identifying moments when mentalizing is lost and inviting the mother to reengage in the process. Typically, the focus gravitates toward an event or relationship about which the mother has strong, unmetabolized thoughts or emotions. If the child is not the topic, the therapist can bring the focus back to the child when the timing seems appropriate. The MIO intervention approach involves five components, including fostering a therapeutic alliance (maintaining a supportive, nonjudgmental, interested presence); providing timely developmental guidance and parenting strategies (offering knowledge about the child's age-related capabilities and strategies for responding to the child's challenging behaviors); maintaining

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a mentalizing stance (showing curiosity while acknowledging the opacity of internal mental and emotional states); mentalizing for the mother (helping the mother make sense of her own internal thoughts and emotions); and mentalizing for the child (helping the mother make sense of the child's emotional cues and states in terms of attachment needs; for a detailed intervention description, see Bers, 2016; Suchman, 2016a, 2016b; Suchman & DeCoste, 2018).

Evidence basis

In the first randomized trial (see Suchman et al., 2011), MIO was delivered as an individual 12-session intervention and compared to an individual 12-session psychoeducational intervention (PE) with 47 mothers enrolled in outpatient substance abuse treatment and caring for children between birth and 3 years of age (in addition to a substance use disorders, most mothers were receiving treatment for mood disorders, unemployed, and relying on public assistance for basic needs). At the end of treatment, mothers receiving MIO showed higher RF levels, more coherent mental representations of caregiving, and more sensitive and responsive interactions with their children than mothers receiving PE. Children of mothers receiving MIO also showed clearer communication bids with their mothers than children of mothers receiving PE. Mothers in both conditions showed improvement in substance use and psychiatric symptoms. All group differences were sustained at the 6-week follow-up. In the second randomized trial (see Suchman et al., 2017), 12 individual MIO sessions were again compared to 12 individual PE sessions with 87 mothers enrolled in outpatient substance abuse treatment caring for children between 1 and 5 years of age. Mothers receiving MIO showed higher levels of RF and more coherent mental representations of caregiving at the end of treatment than mothers who received PE, and these differences were sustained at the 3-month follow-up. At the 12-month follow-up, mothers receiving MIO showed greater caregiving sensitivity, their children showed greater involvement, and dyads showed greater reciprocity than their PE counterparts. Mothers with more severe addiction histories (i.e., family history of substance abuse and mental illness and early initiation of substance use) benefited most from MIO, and their children showed greater improvement in attachment security than counterparts receiving PE. In a third pilot study (see Suchman et al., 2016), with 14 mothers receiving mental health and child guidance services in a public, state-funded outpatient clinic, community-based clinicians were trained to deliver MIO with fidelity, and mothers showed improvement in RF, parenting stress, and psychiatric symptoms.

Adapting Evidence-Based Interventions in the Real World

One reason evidence-based interventions do not often succeed in real-world settings is because researchers fail to adapt the intervention to the intended setting. Knowing how to adapt an intervention so that it retains its effects while, at the same time, fitting the real world requires knowledge about treatment mechanisms in relevant settings (see Onken, Carroll, Shoham, Cuthberg, & Riddle, 2014, for further discussion). A second reason that evidence-based interventions may often fail is the absence of focus on building a working relationship between academic and community partners in which the community members are viewed as equal partners with critical expertise and understanding of the local culture and clinical population necessary for effective research design and intervention adaptation (Wallerstein & Duran, 2006).

Mechanisms of change

When clinical scientists uncover essential mechanisms of action, they may be able to package the intervention in a way that is highly implementable. Using data from the first randomized clinical trial testing MIO (see Suchman, DeCoste, Rosenberger, & McMahon, 2012), controlling for child age, maternal education, assigned therapist, and number of sessions, we examined which therapeutic components (e.g., alliance building, mentalizing, and behavioral guidance) were associated with positive treatment outcomes, and found that therapist effort to promote mentalizing was the strongest predictor of improvement in maternal RF. We also examined which treatment outcomes (e.g., maternal mentalizing, psychiatric symptoms, and substance use) were most strongly associated with improvement in the mother–child relationship. We found that improvement in maternal mentalizing and depression were the strongest predictors of improvement in relationship quality. Using data from the second randomized clinical trial testing MIO (see Suchman, DeCoste, Borelli, & McMahon, 2018), we replicated the test of mechanisms and found similar results: therapist effort to promote mentalizing was again the strongest predictor of improvement in maternal RF, which, in turn, was the strongest predictor of improvement in the mother–child relationship and in child–parent attachment. Taken together, these findings led to the conclusion that the mentalizing component is a key intervention component and that flexibility could be incorporated with regard to other nonessential components (e.g., child age, number of sessions, treatment format, developmental guidance, and behavioral guidance).

Community-based participatory research (CBPR)

CBPR is one of the most effective methods for adapting evidence-based therapies in culturally diverse communities where health disparities persist. CBPR is a collaborative approach that equitably involves all participants in the research process and recognizes the unique strengths that each partner brings (see Minkler & Wallerstein, 2003). CBPR is based on the assumption that academic and community partners can learn from each other, that research efforts should include a commitment to training community members in research, and that research findings and acquired knowledge should benefit all partners and promote a reduction in health disparities (see Israel et al., 2003).

Current Study Aims

In this study, our first aim was to establish a long-term collaborative relationship based on CBPR principles between members of the research team that developed and evaluated MIO in the United States and psychosocial treatment providers in four public sector (tertiary) university-affiliated hospitals in the Western Cape. The primary objective of the collaboration was to adapt MIO for delivery with mothers caring for children in extremely stressful environments where mothers and/or children's mental or physical health had been compromised. Our first research aim involved using qualitative research methods to monitor the collaborative process whereby participants arrived at decisions about how MIO would be adapted within hospital units while retaining its essential components (i.e., its emphasis on

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mentalizing). Our second and related research aim involved using qualitative research methods to analyze the treatment providers' retrospective views on the feasibility and acceptability of the adapted MIO intervention as soon as the intervention delivery with study subjects was completed. Our third aim involved completing a small pilot study in which we conducted a preliminary test of the adapted MIO's efficacy to improve maternal RF and mother–child interaction quality. We were also interested in conducting a preliminary examination of the proposed mechanisms of change: whether improvement in maternal RF was associated with improvement in mother–child interactions.

Qualitative Study

In this section, after describing the qualitative methods used, we describe the collaborative process, including how it began, who participated, what training was provided, and what decisions were made about MIO adaptation and research design at each site. We then present findings regarding themes that emerged through analysis of treatment-providers' retrospective perspectives about the intervention's feasibility and acceptability based on their experiences conducting it.

Method

The primary data source used for qualitative analyses included (a) process notes from and materials presented during in-person and internet-assisted meetings during planning and implementation stages and (b) process notes from in-person conversations and written e-mail exchanges in which the feasibility and adaptability of the intervention were discussed. Using a descriptive approach, the collaborative process was first summarized in order to characterize the treatment providers' rationale for MIO adaptations at each site. Then, using a narrative theme analysis (Reissman, 1993), e-mail correspondences were analyzed for themes related to collaborators' perspectives about the feasibility and acceptability of the adaptation at their respective local sites. Qualitative analysis were completed by the first author (N.S.) and then results were submitted to other members of the team for confirmation of their validity. Any discrepancies between results and participant perspectives were amended to reflect participant views.

Description of the collaborative process

Initial training. The collaboration began following a 4-day workshop in Cape Town (led by author N.S.) focusing on the MIO intervention research completed in the United States. The seminar began with a 1-day didactic component in which the intervention rationale and approach were presented. The following 2 days involved an interactive component during which videos of clinical assessments and intervention sessions completed during the US randomized trials were reviewed and discussed (with written permission from the American research subjects), allowing the Western Cape treatment providers to consider whether and how the treatment approach would be relevant to their local treatment population and setting. The fourth and final day was devoted to exploring next steps in the collaboration.

Collaborators. Eleven treatment providers from four university-affiliated tertiary hospital units expressed interest in participating in the collaboration with the US research team. The treatment providers included three child and adolescent psychiatrists who served as clinical specialists at their respective hospitals and also had joint university faculty appointments (years of employment in their respective clinical professions ranged from 6 to 30 years). Seven treatment providers were masters-level clinical psychologists who also had university teaching appointments (post-training clinical professional experience ranged from 5 to 14 years). One treatment provider was high school educated and worked as a cultural therapist at a local children's hospital and affiliated university for 18 years.

Treatment populations. Collectively, the treatment providers were actively serving five treatment populations in six hospital unit settings across four tertiary hospitals primarily serving the public sector in the Western Cape Province. The treatment populations and settings included (a) mothers from across the province who were admitted to a tertiary hospital inpatient maternity unit in Cape Town, who recently gave birth prematurely to infants who were admitted to a neonatal intensive care unit in the same hospital; (b) mothers of children who were recovering from burn injuries and recently discharged from an inpatient university-affiliated children's hospital burn unit in Cape Town; (c) mothers of children who were receiving treatment for intellectual disabilities in an outpatient mental health hospital clinic that served the public sector and was located in Mitchells Plains; (d) mothers receiving outpatient mental health services in another mental health unit in the same Mitchells Plains hospital; (e) mothers receiving outpatient mental health services in a public mental health hospital in the Tygerberg Eastern Health District; and (f) mothers enrolled in outpatient substance abuse services in the same mental health hospital in the Tygerberg Eastern Health District.

Reasons for implementing MIO. During the first 6 months following the training seminar, participating investigators and clinicians met monthly for an hour-long internet-assisted video conference to discuss each site's rationale and approach for adapting the MIO intervention while retaining its core emphasis on mentalizing. Discussed as well were the selection and adaptation of assessments that would be used to quantitatively evaluate the preliminary efficacy of MIO across the six sites. Several participants expressed a wish for the collaboration to adopt a stance of *cultural humility* (Tervalon & Murray-Garcia, 1998), an openness on the part of researchers and treatment providers alike to reflect on their own beliefs and decisions. There was also a shared understanding that the collaboration would be open-ended and that the ultimate shared goal was the elimination of inequity and health disparities. The treatment providers also shared a common interest in offering mothers in their care the opportunity to think reflectively about the possible meaning of their children's behavior and to consider their young children's emotional needs from a developmental perspective.

Treatment providers for mothers of premature infants reported that the mother–baby relationship is often more difficult than with babies of full-term pregnancies (Minde, 2000). Premature babies often have muted expression and response to their mothers and experience lower levels of synchronicity when their mothers are stressed. NICU nurses are often unsure how to receive or intervene with emotional difficulties experienced by mothers experiencing a first premature birth.

Treatment providers for mothers of children leaving the burn injury unit reported that child burn injuries can be both physically and emotionally traumatic for children and often psychologically traumatizing for parents as well (Kent, King, & Cochrane,

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2000; McGarry et al., 2013). Child burn injuries can disturb attachment security by the unsafe nature of the environment, lengthy hospitalizations, and painful procedures. Parental emotional support promotes the psychosocial adjustment of pediatric burn survivors (DeSousa, 2010).

Treatment providers for mothers of children with intellectual disabilities reported that children often have behavioral and emotional challenges along with a need for training in basic skills (e.g., feeding, dressing, and toileting). Their verbal abilities are often limited so that their emotional needs are often expressed behaviorally. For their parents, the burden of caring for children with extra needs is associated with higher rates of depression and anxiety and may compromise the parent's capacity to mentalize (Mbugua, Kuria, & Ndetei, 2011). Parents often struggle to mentalize their own emotional distress as well as their children's nonverbal behavioral and emotional cues.

Treatment providers for mothers with mental illness and substance misuse diagnoses reported that parents with mental illness and substance use disorders are often offspring of parents with similar disorders and many have experienced attachment disruptions with early caregivers. In the presence of maternal mental health and substance use disorders, there is greater risk of developing attachment difficulties, particularly if the disorder is chronic, current, or intermittent through infancy (Wan & Green, 2009). A mentalizing intervention was therefore thought to have the potential to promote the capacity for secure attachment with their own children.

Additional clinical and assessment training. In the 2 years following the initial training, two clinical consultants from the US team traveled separately to the Western Cape on three different occasions to provide clinical training and consultation to the 11 South African treatment providers. The first visit lasted 5 days and included a review of MIO approach and principles, instruction, demonstration and practice of therapeutic techniques, and discussions about adapting MIO to the local populations and settings. The second and third visits involved individual consultation and review of videotaped intervention sessions in order to provide feedback and opportunities to reflect on the case.

Two members of the US research team also made a separate trip to the Western Cape in the second year of the collaboration to help finalize the assessment plan and provide training in the administration of and coding of assessments. Nine of the 11 treatment providers attended the full week of training and 2 (1 of whom was not directly involved with intervention delivery) completed reliability assessments after the training and became qualified to code the mother–child interaction assessments (the parenting interview coder training was completed by trained coders in the United States).

Adapting MIO to the local setting (see Table 1). From the outset, collaborators agreed to retain in common the three essential components of the MIO intervention (the mentalizing stance, mentalizing for the self, and mentalizing for the child) that demonstrated essentialness to achieving improved outcomes in the two US trials. There was also a shared agreement that maintaining the therapeutic alliance was critical to retaining the trust and presence of the patients in the program. It was important to the treatment providers that there be an appreciation of the "real-world setting," including acknowledgment of time and logistical constraints, clinical expertise, and cultural differences in the adaptation of MIO. The treatment providers considered themselves to be conduits of evidence-based treatments to their local communities and expressed a strong desire that MIO be relevant, appropriate, and feasible.

Because MIO was thought to address a universal need in mothers with children of all ages who are exposed to environmental stressors, to have the opportunity to think reflectively about their own and their children's experiences in an emotionally supportive context where their thoughts and emotions are taken seriously, the collaborators agreed to include treatment populations who shared in common their exposure to environmental stress. Most treatment providers chose to focus on mothers who are caring for young children (i.e., birth to 5 years of age) because of the importance of secure child–parent attachment relationships early in life. However, children with intellectual disabilities up to 13 years of age were also considered likely to benefit given their need for ongoing relational support to promote their emotional development.

The format, frequency, and duration of the MIO intervention were modified to accommodate the local treatment population. At three sites, the decision was made to adopt a group format that provides a more familiar cultural context, and lessens the intensity of the relationship with a professional health worker (a relationship that can sometimes be a prelude to stigma and isolation). The group for mothers of children with burn injuries was also offered for 8 (rather than 12) weeks to coincide with outpatient follow-up visits. Most treatment providers chose weekly treatment sessions with one exception: the group intervention for mothers of premature infants was offered twice weekly for 4 weeks, the expected duration of the mothers' stay on the unit. Mothers in all settings except the premature infant unit were required to live within the greater Cape Town area to ensure that transportation was available; mothers on the infant unit typically had homes in distant communities but were housed temporarily at the hospital during their participation. Another eligibility criteria for all mothers was the anticipation that they would be available to complete the full intervention study.

All but one of the units chose to conduct the same research assessment protocol: a brief demographic survey followed by a 1-hr parenting interview to assess RF and a 30-min play session to assess interaction quality (see Quantitative Methods for measurement details). However, the research protocol was modified to avoid placing excessive burden on the mothers. Specifically, the parenting interview was abbreviated and reorganized so as not to be too overwhelming (see Quantitative Methods section for further details). All but one of the units chose to video record the treatment sessions. On the Kangaroo Care unit, process notes were completed following each group, but no research assessments were conducted because of the potential burden they were thought to pose to mothers so close in time to their infant's premature delivery. Group sessions were also not video-recorded because this was requested by the mothers.

Because three languages (Afrikaans, English, and isiXhosa) are predominantly spoken in the Cape Town area of the Western Cape, there was a need to decide in what language(s) each group would be conducted. At some sites, the language was chosen based on the preferred language of group members. The group for mothers caring for premature infants, for example, was conducted in English because it was the only common language (mothers in the group were bilingual, either fluent in IsiXhosa and English or fluent in Afrikaans and English). At the hospital site in Mitchells Plains, most treatment-seeking adults were bilingual in English and Afrikaans, and so the

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Table 1. Adaptations to local setting and treatment population

	Child criteria		Maternal inclusion/Exclusion criteria								Intervention format					Assessments		
	Exclusion	Inclusion	MI[a]		SA[b]		CG[c]		Required fluency		Lgth (wks)	Modality		Sessions / week				
			In	Ex	In	Ex	In	Ex	Engl/ Afr	IsiXhosa		Grp	Ind	1	2	Intake	PDI	CIB
At-risk mothers of premature infants in Kangaroo Care	Medical illness or requiring invasive procedures	1st premature infant (<1250g weight)		√		√		√	√		4	√			√	√		
Mothers of children discharged from hospital burn unit	>20% total body surface injury	≤5 years of age recently discharged from burn unit		√		√		√		√	8	√		√		√	√	√
Mothers of children with intellectual disabilities	—	≤13 years of age with mild to severe intellectual disability		√		√		√	√		12		√	√		√	√	√
Mothers with mental illness[a]	—	≤5 years of age	√			√		√	√		12	√		√		√	√	√
Mothers with substance use disorders	—	≤5 years of age		√	√			√	√		12		√	√		√	√	√
Mothers with mental illness[a]	—	≤5 years of age	√			√		√	√		12		√	√		√	√	√

PDI, Parent Development Interview. CIB, Coding Interactive Behavior. [a]Mental Illness (acutely psychotic, suicidal, or homicidal mothers excluded). [b] Substance abuse. [c] Cognitive disability.

intervention was conducted in the preferred language of the patient (either English or Afrikaans). On the unit with mothers caring for children with intellectual disabilities, the language was chosen based on the language proficiency of the facilitators (who were only fluent in Afrikaans and English) although bilingual IsiXhosa-speaking mothers were able to participate because of their fluency in English. Treatment providers on the child burn unit believed it was important to conduct a culturally homogeneous group that afforded the opportunity to reflect on how cultural influences and nuances affected the family and child care. They chose to conduct the group in IsiXhosa because it is the language spoken by the majority of Black African people living in the Western Cape. One of the two treatment providers who spoke IsiXhosa fluently served as a translator for the second treatment provider who was very familiar with IsiXhosa but not fluent.

The flexibility in MIO's content (i.e., that the treatment provider follows the mother's lead in content focus) gave treatment providers room to invite discussion that extended to relationships with family and community members who are often in-the-know and sometimes also very involved in decisions about childrearing and to talk about relationships with healthcare workers in the hospitals by whom some mothers felt judged and misunderstood. At the same time, treatment providers agreed that the child participating in the research study would be consistently held in mind by clinicians so that the focus could come around to considering the target child's experiences, emerging development, and relationship with his or her mother and family.

Emergent themes in treatment providers' perspectives

Emergent themes in treatment providers' retrospective views of intervention feasibility and acceptability, the challenges encountered during the implementation, and the ways in which the intervention met their initial objectives are elaborated below.

Children and mothers benefited from the core emphasis on mentalizing

Most treatment providers commented on the benefits of focusing on mentalizing for the child and mother. For example, one treatment provider for mothers of children with intellectual disabilities commented:

> Mentalizing encouraged a kind of psychological flexibility/openness to experimenting with their responses [to children] rather than thinking about things in black and white or right and wrong. It opened up possibilities for engaging differently with their children and reflecting on their children as developing individuals with their own needs and motives. Caregivers became more receptive to understanding their children's ways of communicating emotional and psychological needs. I think it improved the psychological well-being of caregivers in the study as well.

However, relying on a mother's verbal (as opposed to embodied, for example) mentalizing capacity led one treatment provider to wonder about its effectiveness with mothers whose primary language was not English:

> Mentalizing was not generally met by the [African] mothers as an "aha experience" or discovery. Instead, when asking mothers whether they thought the way they were feeling affected their child, the answers were often short and in the affirmative, leaving little room to elaborate. Reliance on verbal processes may not be culturally syntonic in the traditional African culture, even though mentalizing is regarded as a universal human ability. For most mothers who were raised in the traditional, apprentice model, talking about what one is thinking and feeling is not the norm. Under the traditional African hierarchical family system, thoughts and emotions are often kept "inside" rather than verbally articulated. African mothers may be more likely to comprehend implicitly their infant's mental states but less able to put the motivation for their behavior into words.

This treatment provider therefore concluded that

> The most important ingredients were the creation of a strong alliance, a safe space, the developmental guidance and the response to real life stressors.

Several treatment providers highlighted the importance of mentalizing for the mother first, before directing attention to the child's experience, which allowed mothers to feel "held" and to experience the group as a "safe space." For example:

> The mothers I saw had quite significant challenges in terms of their respective [mental] illnesses and how they were impacted by them. They also experienced psychosocial stressors that needed support. The MIO approach was incredibly useful in this respect, as it created a space for the mother to experience containment and being "held" firstly, while keeping [her] child in mind. I do feel that the fact that the intervention allowed for the mothers to first mentalize for themselves was of critical importance, as I don't think they would have been able to develop more of an ability to mentalize for their child without this aspect. My feeling is, if the child becomes the primary focus, [the mothers] may have experienced therapy as another source of guilt along with a sense of not being adequate as a parent, if their needs were not first met.

The challenge of maintaining the "mentalizing stance."

Several treatment providers spoke about the difficulty of maintaining the mentalizing stance of being curious, inquisitive, and "not knowing" with regard to the mothers' and children's mental states. One provider spoke about the challenging of learning not to ask "why":

> I initially found it difficult to be more curious about the mental state of both mother and child. For each patient, I found myself wanting to connect the dots for them, and would often ask "why," thinking that this was a question that would help mom mentalize. But with the guidance provided in supervision, I realized that asking "why" keeps the process at an intellectual level, at the level of explaining behavior, rather than trying to understand what mental state led or contributed to the behavior, and through the intervention helping the mother understand this so that she can respond to the emotional need of her child rather than simply reacting to the observable behavior.

Another provider spoke about the self-imposed pressure she experienced to encourage or even instill mentalizing even when, intuitively, she felt something different was needed or desired by the mothers:

> The mothers were often keen to learn, and were open to taking in explanations and guidance about their children's emotional and cognitive development (i.e., what the children were capable of understanding and how they viewed the world at specific ages). At times, I found myself lapsing into teaching or preaching in an effort to make mothers mentalize, thereby losing sight of the central tenet of beginning where the mother is. I worried that, if there was no structure to the group, and no central theme, there might be an awkward silence or that real life experiences (i.e., hardships) might become the only focus of the group, leaving the facilitators to face their own sense of impotence and helplessness.

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Another provider wrote about needing to mentalize her own thoughts about parenting experiences that became activated during sessions:

> My first patient had a daughter, about 3 months younger than my own, so I often found myself relating strongly to what she was experiencing with her daughter. We were both first-time moms with daughters, and I found myself thinking often of my daughter and her development when the patient was talking about her daughter's development.

Flexibility in the intervention was essential

Most providers acknowledged that, at times, they did not feel they were able to "strictly adhere" to the core MIO components. For a number of reasons, the flexibility of the model was clearly very important. As one provider commented:

> Adapting the model was inevitable given the setting and the resource limitation, but the ease of flexibility of the collaborative research allowed for meaningful and culturally more appropriate adaptation.

For many mothers enrolled in the study, there were urgent basic needs that required attention (e.g., finding enough food and financial support, having a safe place to bring children, and being isolated from extended family). At times, the reality of daily life was so difficult and all-consuming that thinking about what goes on in the child's mind was low in the hierarchy of priorities. For example, one treatment provider captured her observation that parenting a child with a lifelong disability, and needing to stay functional, creates a barrier to being able to fully engage in mentalizing by saying:

> It is difficult to think emotionally about your child when your thoughts keep returning to the basic necessities.

Many mothers in the study also had unprocessed traumas resulting from their own life experiences. One provider felt especially challenged to maintain the mentalizing stance when her psychiatric patient's symptoms returned:

> I was at times quite concerned that her illness was relapsing, or that her symptoms were not adequately controlled on her medication. …. I found it more difficult to keep a mentalizing stance, as I often found myself providing psycho-education around her illness and trying to help her come to terms with her diagnosis. The process of the sessions was more challenging to follow, as her thought form was at times circumstantial and even tangential, and I found myself becoming a bit confused at times, struggling to stay mentalizing myself! Looking back, perhaps it would have been helpful to extend that intervention, or delay a portion of it in order for her to attain more stability. It did seem as if we ended at a time when she was more able to make use of the therapy, especially as she became more open to thinking about her son's experiences and mental states where initially he was the focus of some of the psychosis and she was quite guarded. However, I do feel she benefitted from having someone to guide her through quite a difficult period (after her 1st diagnosis and admission) and also to have help to make sense of her own internal experience, which at times was chaotic, frightening and unpredictable.

Similarly, a treatment provider for mothers with substance abuse disorders noted:

> In working with mothers with ongoing treatment for their substance use disorder, there were times when the focus shifted to substance-related difficulties such as stressors and exposure to triggers leading to cravings for their substance of choice and having to liaise with their substance treatment team to help manage these urgent matters.

Many providers commented that fostering a therapeutic alliance was foremost in their minds from the outset and proved to be feasible as long as they had the freedom and flexibility to adapt the intervention to their patients.

Flexibility and equal partnership in finalizing the research protocol was also seen as essential.

> The research part was an immense learning curve, certainly for me. The [collaborative] approach enabled us to be therapeutic, "human" and realistic, while at the same time adhering to key principles and doing before- and after-assessments.

Contextual barriers contributed to implementation challenges

The treatment providers described a number of barriers that ranged from challenging to daunting that compromised the implementation. One treatment provider wrote about feeling an absence of timely support and supervision (suggesting that the on-site training visits and long-distance meetings were insufficient):

> We [the other on-site treatment provider and I] were each doing the interventions during times when the other person was on maternity leave and we also did not have much supervision during the [intervention delivery] process; both of these factors contributed to perhaps feeling somewhat uncertain about what I was doing during the process. Retrospectively, I could have been more proactive in seeking out supervision and support.

The providers also spoke in retrospect about the absence of any infrastructure to support the referral process or research protocol, which meant that the project's success depended solely on their commitment to complete the tasks in addition to their other professional responsibilities.

> A common thread [in our retrospective discussions about the project] was the difficulty we had with not having a laboratory where we have the assistance of extra staff and also not [having] the infrastructure to refer patients when they are in need of social grant support, etc. *That* was the problem, namely that everything to do with *our setting* was challenging.

The Kangaroo Care unit treatment providers encountered barriers in communication with the medical staff that compromised the group's sense of stability:

> Mothers living on the premature infant unit were often transferred or discharged by the medical team without advance notice to group leaders or members, due to a shortage of beds. In some instances, medical providers believed that a mother would fare better living in her home community and visiting her infant in the hospital. These rapid departures occurred for each of the mothers who ended up not completing MIO and elicited uncertainty and concern among the group leaders and remaining mothers. In the group sessions, there was often acknowledgment of the mothers' disappearance and concern expressed about their well-being. The absence of communication or information about the transfer seemed to make it more challenging to mentally process the departure. After expressing our concerns to the medical staff, we were eventually included in transfer decisions and [group] retention subsequently improved.

Another treatment provider identified psychosocial barriers in the national South African ethos that parallel the psychosocial challenges the intervention aimed to address:

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> On a deeper level, I feel that we need to be more reflective in South Africa, as a whole, with our difficult past. There is much splitting, projection and blaming, and little taking of responsibility on both sides—black and white. Our thinking is, generally speaking, non-reflective or only very rudimentarily so. So, training Community Health Workers has for me another, deeper level.

Future adaptations

In retrospect, providers were clearly considering further adaptations based on their experience. Providers who conducted the group intervention with mothers with mental illness wrote that they would retain a group format in the future, but limit the size to only three or four mothers, and ensure that mothers were also provided with individual support, possibly by enlisting registered counselors within the community, given the limited resources and small number of MIO-trained clinicians.

Providers on the Kangaroo Care unit spoke about a clear plan to augment their MIO implementation:

> Moving forward, the core concepts of mentalizing form the foundation and basis for the groups which have now been integrated into the daily running of the Kangaroo Care ward, and thinking ahead, we hope to be able to improve on "simple concepts" to more in-depth reflecting. This of course will require more training for the staff within the unit and for ourselves. A work in progress!

One of the therapists for the group of mothers with children with burn injuries also talked about recent forward momentum:

> I have just finished with a Baby Theatre project, and built very much on what we did with our MIO intervention.

One provider for mothers with children with developmental disabilities talked about continuing the intervention approach, but shifting the format:

> In adapting the intervention going forward, I think that probably more group-based interventions [will] be considered, and further consideration for integrated treatment that includes social/community support needs of parents.

The providers on the mental illness and substance abuse units at the Mitchell Plains hospital also described plans to retain the intervention but modify the format:

> We are planning a group intervention to be implemented in the next few weeks to further expand on what was found in the individual pre-pilot. My hope is that this will also be successful and that it could become a more regular occurrence as part of the therapeutic offerings of the hospital.

One provider seemed to sum up the perspectives of the treatment provider group in saying:

> The MIO intervention itself was regarded as very appropriate and feasible, and we are *very* keen that it be transmitted to some key community health workers—something we need to discuss carefully—who to target. There was a great appreciation for [the researchers from the United States] *not* pushing for a randomized controlled trial, but being prepared to come and do further training.

Quantitative Study

In this study, we were interested in conducting a preliminary test of MIO's efficacy for improving maternal mentalizing capacity (primary targeted outcome) and mother–child interaction quality (secondary targeted outcome). We predicted that, at the end of treatment, mothers who completed MIO would show meaningful improvement in their mentalizing capacity, and quality of interactions with target children. We were also interested in conducting a preliminary test of the treatment mechanisms, and predicted that improvement in maternal capacity for mentalizing would be meaningfully associated with improvement in mother–child interaction quality.

Method

Recruitment, consent, and assessment procedures

The Western Cape treatment providers at each of the six hospital units secured human subjects committee approval from their respective hospital internal review boards, affiliated university departments, and the Western Cape Province Department of Health. Treatment providers then solicited referrals for or surveyed the interest of mothers who met eligibility criteria at their respective sites (eligibility requirements are presented in Table 1). Interested and eligible mothers met with the treatment providers to complete informed consent procedures, a brief sociodemographic survey, and baseline assessments (a parenting interview and play session). During consent procedures, in addition to learning about the study, mothers learned that they were free to withdraw from the study at any time without affecting their treatment services or relationship with the hospital unit.

Sample

Twenty-five mothers across the six hospital units completed informed consent procedures and were enrolled in the study. Sociodemographic data for the sample (by hospital unit) are reported in Table 2. A majority of mothers in the sample were non-White (mixed race or Black African), high school-educated, unemployed, single or separated/divorced, living with extended family, and caring for two biological children. A majority of target children's fathers were unemployed, living apart from the mother and child, and not involved in the child's life. Target child age ranged from 1 to 120 months and a majority were male.

Measures

Mentalizing capacity. The Parent Development Interview (PDI; Slade, Aber, Berger, Bresgi, & Kaplan, 2003) was used to measure maternal mentalizing capacity. The PDI is a 33-item semistructured interview that asks a parent to describe particular interactions with their child. Some questions are designed to probe for mental states in the mother (e.g., "Have you ever been angry as a parent? Can you tell me about a time recently when you felt that way?") or the child (e.g., "Does your child ever get emotionally upset? Can you tell me about the last time that happened?") Other questions of a more general nature (e.g., "Can you tell me about a time in the last week that you and your child really clicked?") are designed to permit rather than demand mentalizing activity. For this study, a brief, 14-item version of the PDI was extracted from the original version, with the measure author's permission, to minimize assessment burden. In the two US clinical trials with mothers in addiction treatment, we have used an abbreviated version of the PDI, also with the measure author's permission. The abbreviated version has shown good internal consistency and concurrent validity with other measures of representation (e.g., Working Model of the Child Interview; Zeanah & Benoit, 1995). For this study the brief version was further

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Table 2. Descriptive data

	Tertiary hospital	Children's hospital	Psychiatric hospital outpatient		Psychiatric hospital outpatient		
	Premature birth	Child burn injury	Child intellectual disability	Maternal mental illness	Maternal mental illness	Maternal substance abuse	Total sample
Sample Size	8	3	4	6	2	2	25
				***n* (%)**			
Treatment completers	4 (50)	3 (100)	3 (75)	3 (50)	2 (100)	2 (100)	17 (68)
Maternal characteristics				***Mean* (*SD*)**			
Age	26.63 (4.34)	28.67 (9.02)	29.25 (6.19)	28.17 (6.34)	29.00 (7.07)	23.00 (4.24)	27.64 (5.61)
Education (years)	11.23 (0.35)	11.67 (0.58)	12.25 (2.63)	10.50 (0.84)	10.50 (2.12)	12.00 (0.00)	11.29 (1.57)
Marital status				***n* (%)**			
Single	5 (63)	1 (33)	2 (50)	0 (0)	1 (50)	1 (50)	10 (40)
Cohabitating	0 (0)	0 (0)	0 (0)	1 (17)	0 (0)	0 (0)	1 (04)
Married	3 (37)	0 (0)	1 (25)	2 (33)	1 (50)	0 (0)	7 (28)
Divorced/separated	0 (0)	1 (33)	0 (0)	2 (33)	0 (0)	1 (50)	4 (16)
Widowed	0 (0)	1 (33)	0 (0)	0 (0)	0 (0)	0 (0)	1 (04)
Noncohabitating partner	0 (0)	0 (00)	1 (25)	1 (17)	0 (0)	0 (0)	2 (08)
Ethnicity							
Non-white (Colored or Mixed Race)	4 (50)	0 (0)	3 (75)	6 (100)	2 (100)	2 (100)	17 (68)
Black	4 (50)	3 (100)	1 (25)	0 (0)	0 (0)	0 (0)	8 (32)
Caucasian	0 (0)	0 (0)	0 (0)	0 (00)	0 (0)	0 (0)	0 (00)
Employment status							
Employed	0 (0)	2 (67)	0 (0)	0 (0)	0 (0)	0 (0)	2 (08)
Living arrangement							
Independent	2 (25)	2 (67)	1 (25)	2 (33)	0 (0)	0 (0)	7 (28)
With extended family	6 (75)	1 (33)	2 (50)	4 (7)	2 (100)	2 (100)	17 (68)
Homeless	0 (0)	0 (0)	1 (25)	0 (0)	0 (0)	0 (0)	1 (04)
				***Mean* (*SD*)**			
Biological children	2.13 (1.13)	1.33 (0.58)	1.75 (0.96)	1.67 (0.82)	1.50 (0.59)	2.50 (2.12)	1.81 (0.96)
Children raised	2.00 (1.07)	1.33 (0.58)	1.75 (0.96)	1.67 (0.82)	2.00 (0.00)	2.50 (2.12)	1.83 (0.96)

(*Continued*)

Table 2. (*Continued.*)

	Tertiary hospital	Children's hospital	Psychiatric hospital outpatient		Psychiatric hospital outpatient		
	Premature birth	Child burn injury	Child intellectual disability	Maternal mental illness	Maternal mental illness	Maternal substance abuse	Total sample
Sample Size	8	3	4	6	2	2	25
Paternal characteristics				***Mean (SD)***			
Age	—[a]	27.00 (0.00)	33.75 (7.89)	33.17 (11.64)	34.00 (9.90)	27.50 (6.36)	32.27 (8.84)
				n **(%)**			
Employed	—[a]	1 (33)	2 (50)	3 (50)	2 (100)	0 (0)	10 (42)
Living w/mother and target child	2 (25)	0 (0)	1 (25)	2 (33)	1 (50)	0 (0)	6 (24)
Involved in child's life	4 (50)	0 (0)	2 (50)	3 (50)	2 (100)	1 (50)	11 (44)
Target child characteristics				***Mean (SD)***			
Age (months)	1 (0.02)	15.67 (10.70)	78.33 (62.07)	24.00 (12.57)	27.00 (29.70)	19.00 (16.97)	30.85 (36.17)
Male	5 (50)[b]	2 (67)	2 (50)	4 (67)	1 (50)	1 (50)	14 (56)
Female	5 (50)	1 (33)	2 (50)	2 (33)	1 (50)	1 (50)	11 (44)

[a]Data not available. [b]One mother had triplets.

modified in terms of the question order in order to minimize assessment burden (e.g., a question about hopes and fears for the child was moved from the end to the middle of the interview because of its potential to activate feelings of sadness and hopelessness in this population). The revised measure requires approximately 1 hr to administer. All interviews were audiotaped, translated (if needed), and transcribed. Each response is coded on a 1 to 9 scale based on quantity and quality of mentalizing. A score $\leq$3 indicates "pre-mentalizing" or an absence of awareness of mental states beyond vague, unelaborated, cliché-like references (e.g., "He doesn't have a care in the world"). A score of 5 indicates adequate mentalizing, a demonstrated awareness of mental states and how they influence behaviors and relationships (e.g., "I know when she likes her snack because she smiles and claps her hands … and that makes me proud"). Higher scores indicate more complex and nuanced understanding of mental states and how they influence behavior and relationships. The transcribed interviews were coded by a PDI coding trainer who was blind to time point and other information about the dyad. Item interrater reliability was established with another coding trainer (author N.S.) on 16 randomly selected transcripts. Interclass correlations ranged from .58 ($p < .05$) to .88 ($p < .001$). All item score discrepancies $\geq$2 were discussed by coders in a conference call until a common score was established and this score was entered in the final database.

For this investigation, we were interested in four indices of RF: overall, potential, self-focused and child-focused. Overall RF is the score assigned by the rater representing the mother's typical capacity for RF during the interview. Potential RF is the highest score achieved on any single item, indicating greatest RF potential shown by the mother during the interview. Self-focused RF is the mother's capacity to mentalize about her own strong emotions and their impact on her child, and is composed of four items that ask the mother to consider times she felt pain or difficulty, anger, and guilt as a parent and about how having the target child had changed her. Child-focused RF involves the mother's capacity to mentalize about her child's strong emotions and their impact on the mother herself, and is composed of five items asking the mother to describe her child's most difficult behavior, times that she and her child were clicking and not clicking, and times her child might have needed her attention or felt emotionally upset (see Suchman, DeCoste, Leigh, & Borelli, 2010, for more details about scale validation).

Mother–child interaction quality. To examine the quality of mother–child interactions under conditions of mild uncertainty where a child is ordinarily likely to use the mother as a secure base and safe haven, we used the Curiosity Box Paradigm developed by Mayes, Carter, and Stubbe (1993). During the Curiosity Box Paradigm, the mother and child explore two sets of toys in two consecutive timed episodes where the number (ranging from 3 to 12 in each episode) and nature of the toys (number of toys involving symbolic play) and episode duration (ranging from 3 to 7 min) increased with child age. The purpose of the first episode, which involves toys that are likely familiar to the child, is to acclimate the dyad to the activity. The second episode involves toys chosen to elicit mild uncertainty or curiosity in the child (e.g., a realistic rubber snake or plastic bug or a Rubik's cube) that designed to activate the child's need for a secure base during exploration. Care was taken by the treatment providers to procure toys that were relevant (in terms of familiarity or novelty) to children living in the Western Cape, and the same

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age-relevant toy set up was used at each site. All sessions were video-recorded, and second (novel) episodes were coded using Feldman's system for Coding Interactive Behavior (CIB; Feldman, 1998). The CIB uses a 5-point scale for rating parent, child, and dyadic behaviors that are likely to promote or inhibit emotional regulation in the child and dyad. The CIB includes four composite maternal scales (the 11-item Sensitivity Scale, the 7-item Intrusiveness Scale, the 3-Item Limit Setting Scale, and the 4-item Negative Emotionality Scale), three composite child scales (the 8-item Involvement Scale, the 4-item Withdrawal Scale, and the 3-item Compliance Scale), and two composite dyad scales (the 3-item Reciprocity Scale and the 2-item Negative State Scale). Two members of the local treatment provider team who were blind to time point and other case information coded all interaction sessions (one coder was also a treatment provider for the study and was therefore only assigned videos from other sites to code). With the approval of the CIB author, the coders were trained by a member of the US research team (author C.D.) and completed reliability checks with her and with a member of the CIB author's laboratory. The two coders each achieved 85% item reliability with each trainer, the reliability threshold established by the measure author.

Data analysis

Because of the very small sample and the preliminary nature of the pilot study, we were most interested in examining effect sizes that would estimate the magnitude of effect without being influenced by sample size. For the first hypothesis, effect size (d) was used to estimate magnitude of change in mentalizing capacity and mother–child interaction quality from pre- to posttreatment with $d \geq 0.20$ (small-medium effects) considered meaningful (Cohen, 1988). In meta-analytic studies of psychosocial treatments (e.g., Smith, Glass, & Miller, 1980), effect size for treatment outcomes has tended to aggregate around $d = 0.27$, which corresponds to a small to medium effect (Cohen, 1988). For the second hypothesis, effect size (r) was used to estimate magnitude of correlations between self-focused RF and child-focused RF, respectively, with each of the composite mother–child interaction scores, with $r \geq .30$ (medium effects; Cohen, 1988) considered meaningful.

Results

Treatment outcomes

Maternal RF

As shown in Table 3, large effects were found for mean improvement in overall RF ($d = 1.10$) and self-focused RF ($d = 0.81$), a medium effect was found for mean improvement in child-focused RF ($d = 0.73$), and a small to medium effect was found for mean improvement in potential RF ($d = 0.46$). At baseline, RF scores indicated that, as a group, mothers were showing a mentalizing capacity that involved recognizing simple mental states (e.g., happy, sad, and scared; i.e., RF ~ 3), without recognizing their impact on behavior (their own or their child's) or on others' mental states (e.g., impact of mother's own emotions on the child's). However, the potential RF mean at baseline (i.e., RF ~ 4) indicates that, as a group, mothers had the potential to develop a higher mentalizing capacity. At posttreatment, RF scores indicate that, as a group, mothers were showing a mentalizing capacity that approximates their potential capacity at baseline (i.e., RF ~ 4) and that their new potential capacity was moving toward a level of RF that is considered ordinary or average in the general population (i.e., RF ~ 5).

Mother–child interaction quality

As shown in Table 3, small to medium effects were found for seven out of the nine composite CIB indices. Specifically, as a group, mothers showed greater sensitivity and less intrusiveness and negative emotionality at the end of treatment. There was no meaningful change in maternal limit setting. As a group, children showed greater involvement and compliance during interactions with their mothers. There was no meaningful change in child withdrawal. Mother–child dyads showed greater reciprocity and less negative states (i.e., less emotional constriction and discomfort) in their interactions with children at the end of treatment.

Proposed treatment model

Support was found for the hypothesis that maternal RF would be associated with mother–child interaction quality. As shown in Table 4, self-focused RF was positively correlated with maternal limit setting and negatively correlated with maternal negative emotionality. Child-focused RF was correlated with three of four maternal behaviors (positively with sensitivity and limit setting and negatively with intrusiveness), with two of three child behavior indices (positively correlated with involvement and compliance), and with both dyadic composite indices (positively correlated with reciprocity and negatively correlated with negative state).

Discussion

In this study, our aim was to establish a long-term collaborate relationship based on CBPR principles between American researchers and treatment providers in the Western Cape in alignment with a provincial initiative to combat healthcare disparities by addressing parenting stress, one social determinant of child health and potential buffer for the impact of stress exposure on children's well-being. Our collaboration successfully engaged mental health professionals from university-affiliated tertiary hospitals serving the public sector in an innovative process of healthcare reform rather than yielding to the dominance of a biomedical perspective and compliance culture that has dominated healthcare during the past 20 years (Gilson et al., 2017).

Results of qualitative analyses of treatment provider perspectives indicate that the partnership was experienced as equal, mutually beneficial, and generally productive in adapting an evidence-based parenting intervention for a broad spectrum of at-risk parents and children receiving services in six public sector serving hospital units. Overall, there was an apparent consensus that MIO's mentalizing component found to be an essential treatment component in the United States was considered a valuable and beneficial component of the adapted MIO interventions delivered in this study. Quantitative results were consistent with this perception, showing the intervention's preliminary promise for promoting clinically meaningful improvement in maternal mentalizing capacity at the end of treatment as well as meaningful improvement in the mother–child interaction quality. Stated differently, the changes that clinicians observed in the mothers' perceptions of children were reflected in the treatment outcomes rated by independent coders. These findings highlight the importance and significance of a flexible approach to scaling up interventions for use in the real world, especially when adapting interventions to markedly different cultures. Equally important

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Table 3. Descriptive data and effect size (d) for Parent Development Interview and Coding Interactive Behavior pre- and postintervention differences (n = 13)

	Preintervention		Postintervention		*d*
	Mean (*SD*)	*Range*	*Mean* (*SD*)	*Range*	
Maternal reflective functioning					
Overall	2.67 (0.75)	1.0–4.0	3.92 (0.86)	3.0–5.0	1.10**
Potential	4.17 (0.86)	3.0–5.0	4.75 (0.92)	3.0–6.0	0.46*
Self-focused	2.69 (0.46)	2.0–3.8	3.52 (0.91)	2.0–4.8	0.81**
Child-focused	2.88 (0.66)	1.6–4.2	3.59 (0.72)	1.8–4.6	0.73**
Mother–child Interactions					
Maternal					
Sensitivity	2.98 (0.84)	1.79–4.08	3.32 (0.72)	1.88–4.25	0.31*
Intrusiveness	2.42 (0.41)	1.36–2.86	2.17 (0.55)	1.29–2.79	−0.36*
Limit setting	3.94 (0.88)	2.33–5.00	4.12 (0.83)	2.00–5.00	0.16
Negative	1.26 (0.31)	1.00–2.00	1.14 (0.22)	1.00–1.75	−0.32*
Emotionality					
Child					
Involvement	3.02 (0.65)	1.56–3.94	3.19 (0.51)	2.63–4.25	0.21*
Withdrawal	1.51 (0.63)	1.00–3.00	1.38 (0.43)	1.00–2.00	−0.17
Compliance ($n = 8$)[a]	2.83 (0.84)	1.00–3.67	3.20 (0.65)	2.33–4.67	0.35*
Dyadic					
Reciprocity	2.45 (0.96)	1.00–3.83	3.05 (0.95)	1.50–5.00	0.44*
Negative	2.10 (1.21)	1.00–5.00	1.62 (0.80)	1.00–3.50	−0.40*
States					
TOTAL SCORE	3.10 (0.74)	1.67–4.10	3.42 (0.59)	2.35–4.26	0.34*

[a]Noninfants only. *Small (0.20) to medium (0.50) effect. **Medium (0.50) to large (0.80) effect.

is the contribution that each partner brought to the investigation; the knowledge local treatment providers possessed and applied regarding how to effectively adapt MIO to respective treatment populations was undoubtedly critical in the intervention's preliminary success.

There was also a general consensus that the implementation involved many obstacles and challenges at multiple levels that required enormous flexibility to put the mentalization focus on hold to address other more concrete and immediate concerns and needs. The feedback from treatment providers underscores the importance of meeting the mothers on their own terms and focusing on their own concerns, and then fitting in the mentalizing intervention as needed and permitted. The promising outcomes in all trials suggest that a flexible approach has proven to be "good enough" for MIO to demonstrate preliminary efficacy. The findings also point to the conclusion that, whereas MIO is a valuable and potentially efficacious approach, it was not designed nor would it be effective as a stand-alone treatment, but rather an adjunct to many other critically important services.

Many of the treatment providers experienced a sense of isolation in their efforts, being among the first to adopt a relatively new and not widely disseminated psychological approach, and having limited time for supervision and limited access to the trainers in the United States. Still, there was a general consensus on moving forward with scaling up efforts at most sites as well as an interest in seeing broader dissemination. The average 68% completion rate also spoke to the feasibility of the intervention for the parents, given the many obstacles and hardships they face daily in a resource-poor environment. Taken together, these findings point to the importance of carefully considering the supports and infrastructure in place in the environment in order to disperse the burden placed on providers and patients alike. Implementation research that carefully observes, describes, quantifies, and monitors potential obstacles from the start will continue to avoid interventions like MIO from a precipitous drop in efficacy due to real-world conditions. Moreover, the standard research progression followed in evaluating MIO in the United States (i.e., two formal randomized efficacy trials emphasizing treatment fidelity) would likely place an undue burden on public service providers in a highly demanding poorly resourced system.

Support was generally found for the proposed treatment model in that maternal mentalizing capacity was meaningfully related to mother–child interaction quality. Maternal self-focused mentalizing was positively correlated with limit setting and negatively correlated with negative emotionality). Its inverse association with negative emotionality in particular suggests the importance of promoting the mother's capacity to make sense of strong negative emotions in order to regulate them and prevent them from spilling over and contaminating the emotional quality of the relationship. Maternal child-focused mentalizing was related in expected ways to seven of nine interaction quality variables, suggesting the

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Table 4. Correlation table (n = 13)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Demographic factors															
1. Maternal age															
2. Education (years)	−.02														
3. Child age	.52**	.27													
Maternal reflective functioning															
4. Overall	−.53**	.14	−.18												
5. Potential	−.20	.18	−.16	.65**											
6. Self-focused	−.53**	.08	−.27*	.37*	.19										
7. Child-focused	−.66**	.43	−.30*	.80**	.70	.29									
Maternal interaction															
8. Sensitivity	−.22	−.46*	.03	.67**	.34*	.22	.53**								
9. Intrusiveness	.13	−.02	−.15	−.14	−.10	.26	−.30*	−.15							
10. Limit setting	−.28	−.45*	−.14	.52**	.17	.37*	.48*	.92**	−.33						
11. Negative emotion	.35*	.40*	−.06	.08	.26	−.46*	−.05	−.46*	.16	−.64**					
Child interaction															
12. Involvement	.27	.04	.16	.54**	.40*	.25	.47*	.52	−.17	.49	−.05				
13. Withdrawal	−.47*	.42*	−.21	−.08	−.08	.18	.04	.09	.10	−.60**	.26	−.64**			
14. Compliance	.49*	−.48*	.57**	.55**	.63**	.18	.56**	−.62**	−.56**	.78**	−.31	.69**	−.70**		
Dyadic interaction															
15. Reciprocity	−.08	−.36*	−.09	.76**	.49*	.03	.57**	.71**	−.41*	.78**	−.13	.66**	−.55**	.59**	
16. Negative states	−.03	.23	−.26	−.68**	−.49*	−.19	−.65**	.86**	.48*	−.82**	.25	−.82**	.72**	−.73**	−.88**

*Medium effect. **Large effect ($r \geq .1$ = small; $r \geq .3$ = medium; $r \geq .5$ = large).

mother's ability to make sense of her child's emotional needs within an attachment context are critical to the quality of the relationship they experience. However, negative emotionality in the mother was not associated with her child-focused mentalizing capacity. It is possible that mothers experience more containment when responding to questions about the child's experience because the focus is away from her own strong emotions.

Maternal and child age, respectively, were negatively correlated with maternal RF (self-focused and child-focused). Ordinarily, maternal RF would be expected to increase with parenting experience, familiarity with a child, and as the child's verbal communication develops. It is possible that mothers of the older children with intellectual disabilities were more challenged in their mentalizing capacity than mothers of younger children whose development was less compromised. It may also be that the continuous exposure to contextual stress over time has a cumulative effect on mentalizing capacity, which would have especially important implications regarding the need for interventions targeting this capacity.

Conclusions

Although findings suggest MIO's promise, they should be interpreted with caution. It may be that the universal aspects of the intervention (e.g., meeting with a trained clinician, formation of a therapeutic alliance, and social and emotional support from other patients) alone contributed more strongly to outcomes than the core MIO intervention components per se (e.g., mentalizing stance and mentalizing for the mother or child). The very small sample size also warrants caution in generalizing these findings to any treatment population. Participants in this study likely represent patients who are most available and interested in receiving a parenting intervention. A larger implementation trial guided by CBPR principles would help clarify the intervention's potential efficacy and public health benefit on a larger scale. Limitations notwithstanding, these findings do indicate the potential promise of continuing to test mentalization-based interventions like MIO as a supportive adjunct and part of a larger package of comprehensive supportive services.

Although attachment theory and the relevance of infant attachment behaviors originated in large part with Ainsworth's research in Uganda (Ainsworth, 1967), a majority of the cross-cultural attachment research has been restricted to developed Anglo-Saxon and European cultures where populations are relatively homogeneous, limiting opportunities to understand how attachment works and changes in diverse child rearing conditions (van IJzendoorn & Sagi-Schwartz, 2008). The success of this collaboration and the very preliminary but promising treatment outcomes underscore the great potential for flexible international partnerships and collaborations, where researchers and treatment providers bring their respective knowledge and expertise, to adapt evidence-based interventions within diverse treatment population settings in order to reduce mental health disparities in diverse populations.

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