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I PADRI DEI BAMBINI NATI PRETERMINE

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I padri dei bambini nati pretermine
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SOMMARIO

Introduzione. La maggior parte degli studi sullo sviluppo dei neonati prematuri si è concentrata principalmente o esclusivamente sui bambini e le loro madri. La presente tesi, che include una rassegna della letteratura, un protocollo di ricerca e tre studi empirici, si focalizza sui padri fornendo un contributo alle indagini sulle loro esperienze emotive e relazionali durante il ricovero dei figli nati pretemine in terapia intensiva neonatale (TIN). Più precisamente, gli obiettivi principali della ricerca qui presentata erano quelli di esplorare: (a) la presenza di contingenze interattive tra i comportamenti comunicativi dei genitori e i comportamenti (in particolare la direzione dello sguardo) del neonato prematuro posto in una culla riscaldata in TIN, a 34-35 settimane di età post-mestruale; (b) le esperienze emotive dei padri nei loro incontri con il neonato prematuro, (c) le esperienze dei padri nel rapporto con la loro compagna/moglie durante l'ospedalizzazione in TIN del figlio.

Metodo. È stato utilizzato un approccio multi-metodo comprendente: osservazione etnografica in una TIN di III livello situata a Verona, per una durata di 18 mesi; videoregistrazioni della durata di 3 minuti dell'interazione di 20 diadi padre-bambino e di 20 diadi madre-bambino in TIN; una intervista semi-strutturata somministrata a 20 padri durante il ricovero del figlio in terapia intensiva; somministrazione a entrambi i genitori di questionari self-report sugli eventuali sintomi di depressione e sulla qualità della relazione di coppia; raccolta delle informazioni cliniche riguardanti i neonati. I dati sono stati analizzati con un approccio mixed-method che ha integrato analisi quantitative e qualitative.

Risultati. Riguardo l'obiettivo (a) le analisi sequenziali hanno mostrato la presenza di contingenze interattive genitore-neonato pretermine a circa 35 settimane di età post-mestruale. In particolare, il comportamento affiliativo (co-occorrenza di sguardo al b. con espressione di affetto positivo e tocco e/o parlato affettuoso), sia paterno sia materno, ha elicitato l'attenzione del neonato in termini di direzione dello sguardo

verso il volto del genitore, e l'attivazione del neonato ha a sua volta incoraggiato i comportamenti affettuosi del genitore, rivelando un'influenza bidirezionale. Riguardo l'obiettivo (b), sono stati identificati due gruppi. I "padri di bambini pretermine" erano attivamente impegnati nella cura dei loro figli. Al contrario, solo il 63% dei "padri prematuri" era attivamente impegnato nella cura dei figli. I cluster erano associati all'età gestazionale del bambino (età gestazionale media: 32,5 settimane vs 29,1 settimane). Riguardo l'obiettivo (c), sono stati identificati quattro temi principali: il supporto alla madre; la soddisfazione per l'assistenza infermieristica alla madre in TIN; le cure prodigate dalla madre al figlio ricoverato; e la relazione di coppia.

Conclusioni. I nostri risultati documentano la presenza di precocissime contingenze interattive tra i genitori e il neonato prematuro di sole 35 settimane. Suggeriscono inoltre l'importanza di realizzare interventi genitore–specifici volti a incrementare e sostenere il positivo coinvolgimento di padri e madri nella *care* del figlio prematuro ricoverato in TIN. Inoltre, i padri di neonati pretermine dovrebbero ricevere un supporto personalizzato specificamente indirizzato a loro e basato sull'età gestazionale del neonato. Infine, il presente studio suggerisce la possibilità di utilizzare l'intervista come uno strumento di routine per dare voce ai bisogni e ai sentimenti, spesso nascosti e silenziosi, dei padri. Questo potrebbe aiutare lo staff delle TIN a fornire un intervento di supporto su misura per i padri, e così facendo a supportare indirettamente anche le madri e i bambini.

ABSTRACT

Introduction: Most of the studies on the preterm infants' development focused mainly or exclusively on infants and their mothers. This dissertation focused on fathers, and presents a literature review, a protocol study, and three empirical studies that have been carried out to deepen the investigation of fathers' experiences during their preterm infants' hospitalization in the NICU. More precisely, the main aims were to explore: (a) the presence of interactive contingencies between parental communicative behaviors with their preterm infant in a heated cot in the NICU and infant behaviors, particularly gaze direction, at around 34-35 weeks PMA; (b) the fathers' experiences of- and reactions to- the preterm birth and the subsequent stay in the NICU; (c) the fathers' experiences of supporting their partners during their preterm infant's stay in NICU.

Methods and analyses: A multi-method approach was used and included: ethnographic observation in a level-III-NICU located in Verona (Italy) for a duration of 18 months; 3-minute video recordings of 20 father–infant and mother–infant dyads interaction in the NICU; a semi-structured interview with 20 fathers during the infants' hospital stay; self-report questionnaires for both parents on depression and quality of the couple relationship; the collection of infants' clinical information. Data were analyzed using a mixed-method has integrated both qualitative and quantitative data.

Results: About objective (a), sequential analysis showed that parent-preterm infant interactive contingencies are already present at around 35 weeks PMA. In particular, both paternal and maternal affiliative behavior (co-occurrence of Gaze at Infant, Affectionate Touch, Affectionate Talk, and Positive Facial Affect) elicits infant attention in terms of gazing at parent's face; and infants' activation has encouraged parents' affectionate behaviors, showing a bidirectional link between. About

objective (b), two clusters were identified. The 'fathers-of-preterm-infants' were actively engaged in their infant's care. In contrast, only 63% of the "preterm-fathers" were actively engaged in their infant's care. Clusters were associated with the infant's gestational age (mean GA: 32.5 weeks vs 29.1 weeks). About objective (c), four main themes were identified: support for mother; satisfaction with NICU nurses' support for mother; mother's care for infant; and couple relationship.

Conclusions: Our findings suggest that could be crucial to realize parent-specific interventions aimed to improves and sustain positive engagement in parents. Furthermore, fathers of preterm infants should receive personalized support specifically addressed to them and based on the infant's GA. Finally, the present study suggests the possibility to use the interview as a routine tool to give voice to fathers' needs and feelings which are often hidden and silent. This may assists the NICU staff to provide tailored supportive intervention for fathers, and in so doing also to both mothers and infants.

INDICE

INTRODUZIONE

Normalmente, i futuri genitori hanno nove mesi di tempo per prepararsi a essere genitori, capita però che a causa dell'interazione di fattori genetici, epigenetici e ambientali (Plunkett & Muglia, 2008) la gestazione non giunga al termine fisiologico delle 39 settimane, ma venga interrotta dalla nascita pretermine del piccolo, un evento che da un lato mette a rischio il sano sviluppo neuro-comportamentale e socio-emotivo del bambino (Treyvaud et al., 2009, 2010), dall'altro lato ostacola la transizione alla genitorialità, lo sviluppo delle competenze e delle funzioni genitoriali (Bruschweiler-Stern, 1998; Goldberg & Di Vitto, 2002), tanto che è possibile affermare che anche i genitori sono prematuri, lo sono psicologicamente (Stern et al., 2000) anziché fisicamente.

Nelle situazioni di nascita pretermine, in cui i neonati necessitano del ricovero in Terapia Intensiva Neonatale (TIN) e le neomamme spesso sono costrette a letto a causa delle condizioni fisiche in cui versano dopo il parto, particolarmente importante risulta essere la capacità dei padri di essere pronti per essere immediatamente coinvolti. Così, sono quasi sempre i padri che per primi possono osservare, seppur tramite l'incubatrice, e iniziare a interagire col figlio neonato (Colombo, 2011). Allo stesso tempo, i padri spesso devono assolvere a una serie di altri compiti quali: parlare coi neonatologi per avere informazioni su quanto sta accadendo; riportare alle compagne, spesso in maniera filtrata, le informazioni che sono riusciti a recepire; prendere decisioni talvolta difficili e immediate; accompagnare le neomamme, una volta ristabilitesi, a conoscere i rispettivi figli ecc. Si tratta di "uno stress senza riposo" (Fava Vizziello, 2010), che frequentemente questi uomini affrontano in solitudine, nel tentativo di non far gravare ulteriormente la situazione sulle proprie compagne, e spesso appesantiti dagli impegni lavorativi dai quali non possono esimersi (Tracey, 2000, 2010).

Non è infrequente che i padri, similmente alle madri (Monti, Agostini, Marano, & Lupi, 2013), reagiscano alla nascita di un figlio con significativi incrementi nei livelli di ansia, stress e depressione. Uno stato di disagio emotivo che però non è immediatamente evidente perché le manifestazioni sintomatologiche dei padri sono differenti e più difficilmente osservabile rispetto a quelle delle madri (Pohlman, 2005; Baldoni & Ceccarelli, 2010, 2013). Vista l'importanza del padre nel sostenere e confortare la propria compagna, nello svolgere una funzione protettiva nei confronti della diade madre-neonato, e nell'influenzare il primissimo sviluppo del bambino (Baldoni, 2005; Baldoni & Landi, 2015; Cena, Imbasciati, & Baldoni, 2012; Di Folco & Zavattini, 2014), la TIN deve essere intesa dagli operatori non solo come uno spazio di cura del neonato prematuro e di sostegno alla relazione madre-neonato, bensì può/deve essere intesa anche come uno spazio privilegiato di osservazione – e, laddove fosse necessario, d'intervento supportivo – dello stato emotivo dei padri e della qualità delle relazioni che essi intrattengono col proprio figlio e con la propria compagna. Questo perché se è vero che "non esiste un bambino senza la madre" (Winnicott, 1941), è altrettanto vero che non può esservi la coppia madre-bambino se non vi è un padre (Green, 1990; Roussillon, 2015).

Tuttavia, nonostante tale ruolo fondamentale del padre nel parlare con i neonatologi per avere informazioni, nell'avere i primi contatti col figlio ricoeverato e posto nella culla termica, nel prendere decisioni talvolta difficili e immediate, nel sostenere e confortare la propria compagna e nello svolgere una funzione protettiva nei confronti della diade madre-neonato sembra essere indiscutibile, pochi sono gli studi che hanno fatto dei padri il principale focus d'indagine.

Lo scopo della presente tesi di dottorato è pertanto quello di fornire un contributo a questo campo di studi, focalizzandosi sui padri, sulle loro reazioni alla nascita pretermine, sulle loro esperienze emotive, sul loro doppio ruolo di padre di un neonato pretermine e di compagno di una neo-mamma, avendo come spazio-tempo di osservazione quello della TIN, dai primissimi momenti della vita del neonato fino alla sua dimissione.

Nel Capitolo 1 verrà presentata una rassegna della letteratura internazionale degli ultimi due decenni riguardante i padri dei bambini nati pretermine. Nel Capitolo 2 verrà riportato il protocollo di studio nel quale si inserisce la presente tesi (si tratta di uno studio più ampio che coinvolge anche le madri e i neonati, i cui risultati sono in

fase di analisi e saranno prossimamente pubblicati su riviste internazionali peer-reviewed). Nel Capitolo 3 verranno presentati i risultati emersi dalle analisi sequenziale delle interazioni tra padri/madri e neonato pretermine a 35 settimane di età post-mestruale, che mostrano la presenza di contingenze interattive precoci. Infine, nei Capitoli 4 e 5 verranno presentati i risultati emersi dalle analisi di un'intervista semi-strutturata somministrata individualmente a 20 padri; nello specifico, il quarto capitolo tratterà dell'esperienza di questi padri nella relazione col neonato ricoverato in TIN, mentre il quinto approfondirà l'esperienza dello stesso gruppo di padri nel sostegno alla propria compagna.

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I PADRI DEI BAMBINI NATI PRETERMINE: UNA RISORSA SU CUI INVESTIRE [*]

INTRODUZIONE

La nascita pretermine è un evento fisiologicamente traumatico che mette a rischio sia la vita del neonato che, in caso di sopravvivenza, il suo sano sviluppo a livello neurologico ed emotivo (Cheong et al., 2017; Doyle & Anderson, 2010; Johnson et al., 2009; Marlow, Wolke, Bracewell, & Samara, 2005; Montirosso & Provenzi, 2015; Mwaniki, Atieno, Lawn & Newton, 2012; Talge et al., 2010). Ma il bambino nato pretermine non è l'unico prematuro della famiglia, anche i suoi genitori lo sono, lo sono psicologicamente (Stern, Karraker, Sopko, & Norman, 2000) anziché fisicamente. Tale prematurità psicologica è dovuta al fatto che con l'interruzione della gravidanza prima del termine fisiologico delle 39 settimane viene interrotto anzitempo anche il processo di costruzione della propria genitorialità psichica, rendendo necessario lo sviluppo di una genitorialità rappresentata differente da quella che si stava costruendo durante la gestazione (Ammaniti, Tambelli, & Odorisio, 2014; Pancer, Pratt, Hunsberger, & Gallant, 2000; Tambelli, Odorisio, & Ammaniti, 2010). Le profonde trasformazioni che si compiono nell'assetto psico-emotivo dei genitori in conseguenza al trauma della nascita pretermine di un figlio sono particolarmente importanti perché gli esiti evolutivi cui vanno incontro questi bambini – esiti che possono presentare diversi livelli di limitazioni – dipendono non solo da fattori di rischio biologici, ma anche da fattori ambientali (Feldman, 2007; Minde, 2000; Provenzi, Guida, & Montirosso, 2017; Treyvaud et al., 2012), tra cui la capacità dei genitori di reagire alla situazione traumatica (Goldberg & Di Vitto, 2002; Hall et al., 2017). Particolarmente importante risulta la capacità dei padri di essere pronti per essere immediatamente coinvolti nonostante siano scossi dall'evento inatteso (Fegran, Helseth, & Fagermoen, 2008; Martel, Milette, Bell, St-Cyr Tribble,

[*] Questo lavoro è stato precedentemente pubblicato su *Psicologia Clinica dello Sviluppo* (2016, XX:165–188).

& Payot, 2016) e non si sentano ancora preparati a essere padri (Lindberg, Axelsson, & Öhrling, 2007). Il coinvolgimento attivo dei padri risulta essere particolarmente importante perché le condizioni in cui spesso versano le madri dopo un parto pretermine le costringono a letto. Allora spetta ai padri parlare con i neonatologi per avere informazioni che poi riportano alle compagne; avere i primi contatti col figlio prematuro nella culla termica; prendere decisioni talvolta difficili e immediate; informare i parenti e gli amici; accompagnare le neomamme, una volta ristabilitesi, a conoscere il loro bambino. I padri assolvono i suddetti compiti nonostante spesso sperimentino un senso di alienazione dall'esperienza di paternità (Pohlman, 2009; Turner, Chur-Hansen, Winefield, & Stanners, 2015) e stati emotivi che ostacolano l'assunzione dei ruoli di padre e di partner, con possibili conseguenze sia sullo stato emotivo delle compagne che sullo sviluppo della relazione con il loro bambino nato prematuro.

L'importanza del padre nel sostenere e confortare la propria compagna e nello svolgere una funzione protettiva nei confronti della diade madre-neonato sembra essere indiscutibile (Baldoni, 2005; Baldoni & Ceccarelli, 2010; Bostanabad, Namdar Areshtanab, Balila, Jafarabadi, & Ravanbakhsh, 2017; Cena, Imbasciati, & Baldoni, 2012; Hagen, Iversen, & Svindseth, 2016; Sawyer et al., 2013). Tuttavia, pochi sono gli studi che hanno incluso i padri come focus d'indagine.

Considerando la letteratura degli ultimi due decenni (indicizzata nelle banche date PsycInfo, PubMed, Scopus e Web of Science), la presente rassegna si propone di analizzare questi studi per evidenziarne i risultati principali, le questioni critiche che ne emergono, soprattutto a livello metodologico, e le implicazioni operative. Dopo una breve introduzione alla nascita pretermine e al ruolo dei genitori nello sviluppo psicofisico del bambino prematuro, l'attenzione si concentrerà sui dati empirici disponibili relativi agli stati emotivi e ai comportamenti dei padri dei bambini nati pretermine, all'impatto delle reazioni emotive disfunzionali sull'interazione con il bambino e sullo sviluppo di quest'ultimo, ai fattori di protezione e di rischio. Infine, sulla base di una considerazione critica dello stato dell'arte degli studi sui padri dei bambini nati pretermine, saranno delineate alcune proposte per i futuri sviluppi della ricerca in quest'ambito e la progettazione di interventi di sostegno specificamente destinati a questi padri.

NASCITA PRETERMINE, RUOLO DEI GENITORI PER GLI ESITI EVOLUTIVI DEI FIGLI, E CONDIZIONI DI RISCHIO RELAZIONALE

Si definisce nascita pretermine ogni nascita che avviene prima del completamento della 37esima settimana di gestazione (World Health Organization, 2012). È possibile fare una distinzione più specifica in base all'età gestazionale (indice di maturazione neurologica) e al peso alla nascita (indice di buon funzionamento degli organi). Nel primo caso si distinguono nascite gravemente pretermine (<28 settimane), pretermine (28-31 settimane), e moderatamente pretermine (32-36 settimane); mentre nel secondo caso si distinguono neonati a peso estremamente basso (<1.000 g), a peso molto basso (1.000-1.500 g), e a basso peso (1.500-2.500 g).

Stime recenti indicano in 15.9 milioni il numero di bambini nati pretermine nel 2010 (Blencowe et al., 2012), ovvero l'11.1% di tutti i bambini nati vivi nel mondo. Si tratta di numeri in aumento, basti qui ricordare che per il 2005 le stime (Beck et al., 2010) indicavano in 12.9 milioni il numero di bambini nati pretermine, ovvero il 9.6% di tutti i bambini nati vivi nel mondo. Si tratta di numeri comprendenti sia le nascite pretermine spontanee che quelle indotte, ma in ogni caso le complicazioni legate al nascere prima del termine fisiologico della gravidanza sono causa del 14.1% di tutte le morti che ogni anno interessano i bambino sotto i 5 anni di età (Liu et al., 2012). Fortunatamente, grazie ai progressi della medicina la percentuale di bambini prematuri che continua a vivere è sempre più alta. Tuttavia, circa il 30% di questi bambini avrà conseguenze sullo sviluppo (Mwaniki et al., 2012). Per esempio, tra i bambini gravemente pretermine è comune un deterioramento cognitivo e neurologico all'età di 6 anni (Marlow et al., 2005; Talge et al., 2010), e il rischio di disabilità nello sviluppo neurologico resta alto, in confronto ai coetanei nati a termine, anche tra i 6 e gli 11 anni di età (Johnson et al., 2009). Inoltre, questi soggetti presentano un incrementato rischio di malattie croniche in età adulta (Doyle & Anderson, 2010; Mwaniki et al., 2012). Si tratta di rischi che aumentano bruscamente al diminuire dell'età gestazionale alla nascita (Moster, Lie, & Markestad, 2008; Sansavini et al., 2011).

È importante tenere presente che gli esiti evolutivi dei bambini prematuri dipendono sia da fattori di rischio biologici, sia da fattori ambientali (Feldman, 2007; Feldman & Eidelman, 2006; Greenberg & Crnic, 1988; Minde, 2000; Provenzi et al., 2017; Treyvaud et al., 2012), tra cui le primissime esperienze di contingenza sociale

(Eckerman, Oehler, Hannan, & Molitor, 1995; Feldman, 2009; Fleming, Steiner, & Corter, 1997; Provenzi, Fumagalli et al., 2017) e la capacità dei genitori di adattarsi alle condizioni inattese (Goldberg & Di Vitto, 2002; Hall et al., 2017; Siegel, 1982). Per esempio, è stato rilevato che la depressione e l'ansia dei genitori, essendo fattori che inibiscono una buona interazione col bambino, hanno un'influenza negativa sul precoce sviluppo neurocomportamentale (Treyvaud et al., 2009) e socio-emotivo (Treyvaud et al., 2010) del bambino. Al contrario, un ambiente primario ottimale è associato con un miglior sviluppo cognitivo e socio-emotivo dei bambini pretermine e gravemente pretermine (McCormick, Workman-Daniels, & Brooks-Gunn, 1996; Siegel, 1982; Treyvaud et al., 2012).

Tuttavia, la costruzione di un ambiente relazionale primario capace di offrire esperienze di benessere al bambino gravemente pretermine è ostacolata da una serie di condizioni in cui si trovano gli stessi genitori, a partire dalla forzata separazione dal bambino nato pretermine e la successiva permanenza del piccolo in Terapia Intensiva Neonatale (TIN). Gli studi condotti al riguardo evidenziano come queste procedure necessarie ad alimentare la vita del bambino facciano al tempo stesso da freno ai processi di identificazione con la funzione genitoriale (Bruschweiler-Stern, 1998; Goldberg & Di Vitto, 2002) per due importanti ragioni. La prima è che i neogenitori sono privati della possibilità di prestare al figlio le naturali cure necessarie alla sua sopravvivenza (Cleveland, 2008; Flacking et al., 2012; Fenwick, Barclay, & Schmied, 2001; Woodwards et al., 2014). La seconda è che vengono meno sia le primissime e fondamentali interazioni genitore-bambino, in cui hanno luogo vitali scambi emozionali (Coppola & Cassibba, 2010; Keren, Feldman, Eidelman, Sirota, & Lester, 2003; Mendelsohn, 2005), sia quel periodo immediatamente successivo al parto di sensibilizzazione emotiva del genitore. Tutto ciò interferisce con la possibilità per la diade genitori-neonato di cercare e trovare un ritmo reciprocamente condiviso (Kennel, Voos, & Klaus, 1975, 1979; Klaus & Kennel, 1982). A questo si aggiunge il fatto che, essendo l'ultimo trimestre di gravidanza (dalle 28 alle 39 settimane) la fase in cui emergono i ritmi biologici che forniscono il substrato neurobiologico per le interazioni coordinate (Feldman, 2006), la fisiologica immaturità strutturale e funzionale dei sistemi neurobiologici del bambino prematuro influenza le sue capacità relazionali e, di conseguenza, la relazionalità diadica neonato-caregiver (Leavitt, 2003; Porges, 2003). Più precisamente, nelle interazioni col caregiver questi

bambini, rispetto a quelli nati a termine, sono più passivi, inviano segnali sociali poco chiari e incoerenti, sono maggiormente irritabili, manifestano più emozioni negative, e sono più difficilmente consolabili (Feldman & Eidelman, 2007; Forcada-Guex, Borghini, Pierrehumbert, Ansermet, & Muller-Nix, 2011; Goldberg & Di Vitto, 2002; Ludwig, 2007; Minde, 2000; Olafsen et al., 2012; Singer et al., 2003). Ciò è particolarmente importante se si considera che la qualità dell'interazione caregiver-neonato è un forte fattore di mediazione per lo sviluppo cognitivo e delle abilità di autoregolazione e di socializzazione del bambino (Feldman, 2007; Schore, 2003a, 2003b; van Ijzendoorn, Schuengel & Bakermans-Kranenburg, 1999; Weber, Harrison, & Steward, 2012).

Quindi, a differenza delle diadi a termine, per le quali già nelle prime settimane di vita la comunicazione funziona come un sistema diadico mutualmente adattivo (Lavelli & Fogel, 2005, 2013), i sistemi diadici genitore-bambino nato pretermine sono caratterizzati da minori sincronia e adattamento reciproco (Feldman, 2006; Lester, Hoffman, & Brazelton, 1985), che persistono anche quando il bambino – per lo meno quello nato gravemente pretermine – ha 12 mesi (Sansavini et al., 2015). Per esempio, è stato trovato che i bambini nati pretermine partecipano attivamente all'interazione circa due mesi dopo i bambini nati a termine (Costabile & Tenuta, 2013), e che anche i lattanti pretermine a basso rischio presentano bassi livelli di sincronia dello sguardo col caregiver (Feldman & Eidelman, 2007) e tendono a interrompere tale sincronia entro due secondi dal contatto iniziale (Harel, Gordon, Geva, & Feldman, 2011). La scarsa attivazione sociale influenza gli atteggiamenti e i comportamenti del caregiver (Korja, Latva, & Lehtonen, 2012), con possibilità di gravi ripercussioni sullo sviluppo dell'intersoggettività (Lavelli, 2007) e dell'attaccamento (Baylis et al., 2014; Feldman, 2007; Guillaume et al., 2013).

PADRI PREMATURI: DIFFICOLTÀ, MODIFICAZIONI EMOTIVE E RIPERCUSSIONI SULLO SVILUPPO DEL BAMBINO

Fino a oggi, le ricerche che hanno avuto come oggetto i padri dei bambini nati prematuri hanno indagato principalmente le reazioni emotive che questi uomini presentano di fronte alla nascita pretermine di un figlio e al suo conseguente ricovero in un reparto di TIN. Tali reazioni sono state indagate per mezzo di due principali metodologie di raccolta dati: l'intervista e il questionario self-report. Solo

recentemente, sulla scorta dei dati forniti da questi studi e di una maggiore consapevolezza dell'importanza fondamentale delle prime esperienze interpersonali nel plasmare le strutture e le funzioni del cervello (Imbasciati, 2006a, 2006b; Schore, 2003a; 2003b; Siegel, 2012; Weber et al., 2012), sono state realizzate alcune ricerche – per ora complessivamente poche – volte a indagare se e quali associazioni esistono tra lo stato emotivo dei padri nel periodo perinatale e nel corso del primo anno di vita del bambino e altri fattori quali la qualità della relazione di coppia, il supporto alla relazione madre-neonato, l'interazione padre-neonato e l'attaccamento al padre, e tra questi e lo sviluppo psicologico del bambino prematuro. Questi nuovi studi hanno adottato anche fondamentali metodologie di raccolta dei dati, come per esempio l'osservazione (videoregistrata ove possibile) e la codifica delle interazioni che questi padri hanno con i propri figli durante e dopo il loro ricovero in TIN.

Modificazioni emotive nei padri prematuri

Presi nel loro complesso, i risultati di un primo gruppo di studi basati su interviste semi-strutturate a padri di neonati prematuri (trascritte verbatim e analizzate attraverso tecniche di condensazione e categorizzazione) concorrono a fornirci un quadro piuttosto coerente di difficoltà emotive. Per i padri la nascita pretermine è un evento scioccante (Tracey, 2000; Fegran et al., 2008). Essi raccontano di sentirsi impreparati a ricoprire il ruolo di padre (Lindberg et al., 2007), di sperimentare un senso di alienazione dall'esperienza di paternità (Pohlman, 2009) e, soprattutto, un senso di disorientamento (Lindberg et al., 2007) e di mancanza di controllo (Arockiasamy, Holsti, & Albersheim, 2008). I risultati mostrano che queste difficoltà emotive – che i padri sentono il bisogno di condividere (Coppola, Cassibba, Bosco, & Papagna, 2013) ma celano al personale ospedaliero (Pohlman, 2005, 2009) – almeno inizialmente li portano a "prendere le distanze" dalla situazione, e che solo gradualmente, una volta che le "montagne russe di emozioni" (Arnold et al., 2013; Provenzi et al., 2016) evocate dal contatto col figlio si ammorbidiscono, riescono a fare esperienza di vicinanza emotiva (Lundqvist, Westas, & Hallström, 2007) e fisica al proprio bambino ricoverato in TIN. Questi dati appaiono coerenti con quelli dei pochi studi che hanno considerato i comportamenti dei genitori in TIN, documentando che anche quando frequentano il reparto, i padri sono più riluttanti di

quanto lo siano le madri a passare del tempo vicino al proprio bambino, a osservarlo, parlargli e interagire fisicamente con lui/lei (Fegran et al., 2008).

Un numero più consistente di studi ha invece indagato gli stati emotivi dei padri di neonati pretermine nell'ambito del confronto con le madri, utilizzando questionari di rilevazione di specifiche sintomatologie, quali ansia, stress e depressione.

I lavori che hanno esaminato la sintomatologia ansiosa nei genitori prematuri per mezzo dello State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983) hanno rilevato un'elevata ansia di stato. Questi dati suggeriscono che tale ansia sia legata alla situazione specifica e non a caratteristiche del genitore, tant'è che i padri pretermine presentano livelli d'ansia maggiori rispetto ai padri di bambini nati a termine (Carter, Mulder, Frampton, & Darlow, 2007; Pace et al., 2016). Un altro dato interessante è che i padri prematuri presentano livelli di ansia minori rispetto alle madri; tuttavia non c'è accordo sul fatto che tale differenza sia lieve (Auslander, Netzer, & Arad, 2003; Feeley, Gottlieb, & Zelkowitz, 2007) o statisticamente significativa (Doering, Moser, & Dracup, 2000; Zelkowitz, Bardin, & Papageorgiou, 2007). Sembra comunque che di fronte al miglioramento delle condizioni di salute del bambino i livelli di ansia di stato dei padri decrescano meno di quelli delle madri. Questo è quanto emerge da una ricerca di Zanardo e Freato (2001) sui genitori di bambini prematuri con displasia broncopolmonare, che dopo la dimissione dalla TIN necessitavano di proseguire a casa la terapia con l'ossigeno: anche in seguito al miglioramento delle condizioni del bambino, quindi alla cessazione della dipendenza dall'ossigeno, i padri non andavano incontro a una decrescita significativa dei livelli di ansia di stato.

Oltre all'ansia, questi padri sperimentano elevati livelli di stress psicologico nei mesi che seguono la nascita prematura del proprio figlio (Baía et al., 2016; Koliouli, Zaouche Gaudron, & Raynaud, 2016; Mackley, Locke, Spear, & Joseph, 2010). Tali livelli di stress, solitamente valutati per mezzo del Parenting Stress Index (Abidin, 1995) o del Parental Stressor Scale: Neonatal Intensive Care (Miles, Funk, & Carlson, 1993), risultano essere più alti di quelli riscontrati nei padri di bambini nati a termine, sebbene ci sia disaccordo sul fatto che tale differenza sia significativa (Ravn et al., 2012 *vs* Schappin, Wijnroks, Uniken Venema, & Jongmans, 2013). Disaccordo esiste anche circa i livelli di stress di padri e madri prematuri, confrontando i quali alcuni studi rilevano nei padri livelli inferiori rispetto alle madri (Matricardi, Agostino,

Fedeli, & Montirosso, 2013; Mughal, Ginn, Magill-Evans, & Benzies, 2017; Schappin et al., 2013), mentre altri non rilevano differenze significative (Gatta, Miscioscia, Svanellini, Peraro, & Simonelli, 2017). Al di là del confronto con le madri pretermine e i padri a termine, i livelli di stress nei padri di neonati pretermine possono essere talmente elevati da permettere la diagnosi di disturbo post-traumatico da stress (Lefkowitz, Baxt, & Evans, 2010; Pierrehumbert, Nicole, Muller-Nix, Forcada-Guex, & Ansermet, 2003; Shaw et al., 2006). Tale diagnosi viene solitamente fatta grazie all'ausilio di due questionari: il Post-Traumatic Stress Disorder Questionnaire (PPQ; Quinnell & Hynan, 1999) e/o lo Stanford Acute Stress Reaction Questionnaire (SASRQ; Cardeña, Koopman, Classen, Waelde, & Spiegel, 2000). I dati disponibili indicano che i padri mostrano un esordio tardivo dei sintomi di disturbo post-traumatico, e a distanza di quattro mesi dal parto presentano maggiori rischi di sviluppare tale disturbo rispetto alle madri (Shaw et al., 2009).

Un altro rischio al quale risultano soggetti questi padri è la depressione post-partum, un'eventualità frequente tra le neomadri, con un rischio più alto tra quelle di bambini prematuri (Davis, Edwards, Mohay, & Wollin, 2003; Vigod, Villegas, Dennis, & Ross, 2010), ma che non è un'esclusiva di genere. Infatti, esiste una forte correlazione tra la depressione post-partum materna e quella paterna (Goodman, 2004; Paulson & Bazemore, 2010; Wee, Skouteris, Pier, Richardson, & Milgrom, 2011), che colpisce tra il 4 e il 25% dei padri (Musser, Ahmed, Foli, & Coddington, 2013), sebbene la correlazione non sia specifica tra i genitori di neonati pretermine. Anche per la depressione i dati disponibili relativi a padri di neonati prematuri mostrano livelli maggiori di quelli di padri di bambini nati a termine (Carter et al., 2007; Cheng, Kotelchuck, Gerstein, Taveras, & Poehlmann-Tynan, 2017; Pace et al., 2016), ma minori rispetto a quelli delle madri di bambini nati pretermine (Huhtala et al., 2011). Le manifestazioni sintomatiche della depressione post-partum paterna appaiono però meno definite di quelle della depressione materna (Luca & Bydlowski, 2001; Baldoni & Ceccarelli, 2010). Questi risultati sono confermati da molteplici ricerche che per la rilevazione della depressione genitoriale hanno utilizzato strumenti self-report differenti; tra i più utilizzati la Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), la Edinburgh Postnatal Depression Scale (EPDS; Cox & Holden, 2003) e la Depression Scale del Center for Epidemiological Studies (CES-D; Raloff, 1977).

Effetti sull'interazione padre-bambino e sullo sviluppo del bambino prematuro: fattori di protezione e di rischio

Le ricerche che hanno indagato i fattori socio-demografici associati alla sintomatologia ansiosa dei padri prematuri hanno rilevato che il supporto sociale (Zelkowitz et al., 2007) e la qualità del rapporto coniugale (Carter et al., 2007; Zelkowitz et al., 2007) sono importanti fattori di protezione. Tra i fattori di rischio sono stati invece individuati la maggiore età del padre, il genere del bambino (maschio), la percezione del bambino come problematico (per esempio perché intubato), e la percezione poco positiva dell'equipe curante (Auslander et al., 2003). Il motivo per cui è importante rilevare e trattare la sintomatologia ansiosa nei padri – aldilà dello scontato obiettivo di migliorare la qualità di vita di questi individui – è che risulta un fattore di rischio cumulativo in grado di influire negativamente sullo svolgimento della funzione genitoriale e coniugale, sullo sviluppo di una buona relazione tra madre e bambino sia a termine (Das-Eiden & Leonard, 1996; van Ijzendoorn & De Wolff, 1997) che pretermine (Baldoni, Baldaro, & Benassi 2009), e sullo sviluppo di un attaccamento sicuro papà-bambino. La qualità dell'attaccamento sembra poi associata allo sviluppo psicomotorio del bambino prematuro (Baldoni et al., 2009, 2010), valutato tramite le Scale Bayley (Bayley, 2006). Dalle poche ricerche che hanno indagato gli effetti che la sintomatologia ansiosa paterna ha sull'interazione col bambino prematuro emerge inoltre che elevati livelli di ansia (STAI; Spielberger et al., 1983) paterna sono associati con una più bassa sensibilità diadica (CARE-Index, Dyadic Sensitivity Scale; Crittenden, 1979-2004) a 3 mesi di età corretta (Baldoni et al., 2010), e che i livelli d'ansia (STAI; Spielberger et al., 1983) sono un miglior predittore del comportamento del padre durante l'interazione col figlio prematuro ricoverato in TIN (contatto tattile, visivo, verbale, e responsività), rispetto a quanto lo siano le condizioni di rischio del piccolo (Zelkowitz et al., 2007).

Anche lo stress dei padri dei bambini prematuri sembra costituire un fattore di rischio per lo sviluppo psicologico di questi ultimi. In particolare, uno studio longitudinale di coorte ha mostrato associazioni tra lo stress dei padri (e delle madri, Parenting Stress Index, Abidin, 1995) di bambini prematuri con peso molto basso e lo sviluppo cognitivo di questi bambini a 2 anni di età corretta (Cheng et al., 2017; Huhtala et al., 2011) – dati coerenti con quelli relativi all'associazione tra coinvolgimento dei padri nella cura dei propri figli e sviluppo cognitivo dei bambini

(Levy-Shiff, Hoffman, Mogilner, Levinger, & Mogilner, 1990; Yogman, Kindlon, & Earls 1995) – e tra lo stress genitoriale rilevato a 4 anni di età cronologica e la presenza di problemi nello sviluppo delle abilità sociali, della regolazione emotiva e delle funzioni esecutive dei bambini un anno dopo (Huhtala et al., 2014). Lo stress dei genitori (Parent Stressor Scale: Infant Hospitalization; PSS:IH; Miles & Bunssen, 2003), incluso lo stress coniugale, misurato a 5 settimane dalla nascita prematura è risultato essere inoltre un predittore della depressione paterna (Mackley et al., 2010).

E anche quest'ultima, come prevedibile, si aggiunge ai fattori di rischio per lo sviluppo mentale del bambino. Al riguardo è interessante segnalare che nello studio di Huhtala e colleghi (2011) sopra citato, anche se i padri hanno mostrato sintomi di depressione (BDI; Beck et al., 1961) meno frequentemente delle madri, la sintomatologia depressiva paterna – ma non quella materna – è risultata associata a un ritardo nello sviluppo cognitivo dei bambini pretermine nei primi anni di vita, suggerendo che lo sviluppo cognitivo di questi bambini possa essere associato più al benessere psicologico dei padri che a quello delle madri. Nell'ambito di un colossale progetto di ricerca longitudinale, l'Avon Longitudinal Study of Parents and Children (ALSPAC), basato su una coorte di oltre 10mila padri di bambini nati a termine e non, gli studi di Ramchandani e colleghi hanno inoltre rivelato che quando presente nel periodo post-natale, la depressione paterna (EPDS; Cox & Holden, 2003, a 8 settimane di età corretta) è associata con problemi dello sviluppo emotivo-comportamentale del bambino a 3 e a 6 anni (Rutter Revised Preschool Scales; Elander & Rutter, 1996, somministrata alle madri) e con un incremento di rischio di disturbi della condotta nei figli maschi, anche controllando fattori quali la depressione postnatale materna e il persistere della depressione paterna a 21 mesi di età corretta (Ramchandani, Stein, Evans, & O'Connor, 2005). Tali rischi per lo sviluppo emotivo e comportamentale possono evolvere in disturbi psichiatrici – tipicamente in disturbi della condotta di tipo oppositivo-provocatorio – a 7 anni (Development and Well-Being Assessment; Goodman, Ford, Richards, Gatward, & Meltzer, 2000, somministrato alle madri e agli insegnanti) (Ramchandani, Stein et al., 2008), ed aumentare – sia a 3,6 che a 7 anni – se i padri sono cronicamente depressi (Ramchandani, O' Connor et al., 2008). Un recente studio dello stesso gruppo di ricerca ha però evidenziato che l'associazione tra la depressione post-partum dei padri e i successivi problemi emotivo-comportamentali del bambino è mediata da

fattori familiari quali la depressione materna e il conflitto di coppia (Gutierrez-Galve, Stein, Hanington, Heron, & Ramchandani, 2015).

Altri studi suggeriscono che gli effetti della sintomatologia depressiva paterna sullo sviluppo del bambino potrebbero, in parte, essere dovuti al fatto che essa aumenta i rischi di una compromissione sia della funzione di protezione della diade madre-bambino (Baldoni & Ceccarelli, 2010) che dell'interazione padre-bambino. In particolare, uno studio condotto sui padri depressi di bambini nati a termine ha mostrato che essi sono più ritirati e stimolano meno il loro bambino durante le interazioni (Sethna, Murray, Netsi, Psychogiou, & Ramchandani, 2015): ciò appare particolarmente critico, perché in linea con i risultati sopra presentati è stato trovato che proprio le interazioni padre-lattante che già a 3 mesi appaiono emozionalmente distaccate e remote sono predittive di un precoce sviluppo di comportamenti esternalizzanti del bambino (Ramchandani et al., 2013).

CONSIDERAZIONI CRITICHE

I motivi della scarsità di studi che hanno avuto i padri/ compagni come oggetto d'indagine sono molteplici (Stefana & Lavelli, 2018). In primo luogo, la scarsa visibilità di questa stessa «lacuna» nella ricerca: nei testi di molti articoli vi è un frequente ricorso al termine «genitori» sebbene andando a consultare direttamente gli studi citati a sostegno di tale affermazione si scopre che in tali studi i partecipanti erano esclusivamente o quasi esclusivamente madri. Un altro motivo può essere rintracciato nella scarsa visibilità delle difficoltà emotive e del bisogno di supporto dei padri, poiché questi tendono a rispondere all'esperienza di avere un bambino prematuro in modo diverso rispetto alle madri (Hugill, Letherby, Reid, & Lavender, 2013; Matricardi et al., 2013; Pohlman, 2005). La pur scarsa letteratura documenta infatti che lo stato emotivo dei padri spesso si manifesta fuori dalla TIN, lontano dagli occhi degli operatori (Lundqvist et al., 2007; Kim, Wyatt, Li, & Gaylord, 2016), e i disturbi d'ansia e depressivi dei padri presentano un'insorgenza tardiva rispetto a quelli delle madri, anche per via di un maggiore ricorso a meccanismi psicologici difensivi quali il diniego (Cohen, 2003; Kenner & Wright Lott, 2013; Negri, 2012; Wyly, Allen, & Wilson, 1995). L'insorgenza tardiva spiegherebbe anche perché alcune ricerche (vedi per esempio Doering, Dracup, & Moser, 1999) hanno rilevato che durante il ricovero del neonato in TIN i padri riportano meno sintomi d'ansia e di

depressione rispetto alle madri, senza che tra i coniugi vi siano differenze nella percezione della qualità del nuovo funzionamento familiare.

Tra i pochi studi che hanno orientato la loro attenzione sui padri di bambini nati pretermine si osservano inoltre alcuni limiti metodologici. Gli studi qualitativi condotti tramite la somministrazione di interviste si sono focalizzati prevalentemente su un campione di madri e padri, ma il numero dei padri intervistati è rimasto spesso sotto la doppia cifra (Provenzi & Santoro, 2015). Per esempio, gli studi di Arnold e colleghi (2013) e Fegran e colleghi (2008), pur presentando un'elevata attenzione metodologica, hanno preso in esame rispettivamente 7 e 6 padri.

La maggior parte degli studi considerati ha invece utilizzato strumenti self-report che non considerano la differenza di genere (si pensi a quanto detto sull'espressione dello stato emotivo nei padri rispetto alle madri) e di cultura (si pensi, per esempio, all'espressione dello stato emotivo di un uomo cresciuto in Cina e di un uomo cresciuto in Italia), con conseguenti possibili problemi di validità. Ciò emerge chiaramente da una serie di ricerche condotte per validare sui padri la Edinburgh Postnatal Depression Scale (Cox & Holden, 2003; Cox, Holden, & Sagovsky, 1987). Quattro delle cinque ricerche finora condotte a tal fine hanno, infatti, individuato punteggi di cut-off dei padri sensibilmente più bassi rispetto a quelli delle madri: in due studi, uno condotto in Australia (Matthey, Barnett, Kavanagh, & Howie, 2001) e l'altro in Svezia (Massoudi, Hwang, & Wickberg, 2013), tali punteggi sono risultati più bassi sia per la depressione (maggiore e minore) che per l'ansia; in uno studio condotto nel Regno Unito (Edmondson, Psychogiou, Vlachos, Netsi, & Ramchandani, 2010) i punteggi sono risultati più bassi per la depressione maggiore, mentre in uno studio condotto in Vietnam (Tran, Tran, & Fisher, 2012) più bassi per la depressione maggiore, il disturbo d'ansia generalizzato e il disturbo di panico.

Questi studi condotti per validare la EPDS sui soggetti di sesso maschile introducono l'altra questione di differenza che non è possibile trascurare, quella culturale (Bocknek, Hossain, & Roggman, 2014; Fitzgerald, Mann, & Barratt, 1999). Il rapido incremento dei flussi migratori e della multiculturalità presente nei diversi contesti sociali fa sì che nelle TIN di numerosi paesi occidentali un'elevata percentuale di ricoveri di bambini nati pretermine interessi figli di genitori aventi una cultura e dei codici differenti da quelli di tipo occidentale; per esempio, le dinamiche familiari piuttosto che la reazione al lutto perinatale di persone provenienti dall'Africa

centrale o occidentale anziché dalla Cina o dall'Europa dell'est sono estremamente differenti dalle nostre (Padovani & Olivieri, 2015; Stefana, 2017), così come differenti possono essere i significati di sintomi e di comportamenti pur simili nella forma (Stefana & Gamba, 2013, 2014). Questo fatto ha importanti implicazioni sia per quanto riguarda la rilevazione e la valutazione dello stato emotivo dei diversi padri (e madri), sia per i tipi di intervento di supporto che possono risultare efficaci.

Sempre riguardo l'utilizzo di questionari self-report, è stata rilevata da più parti la necessità di affiancare alla somministrazione di tali questionari l'uso di colloqui clinici. Per esempio, la stessa creatrice della EPDS (Cox & Holden, 2003) ha sottolineato che i punteggi di cut-off possono indicare solo la probabilità di depressione clinica, non la sua gravità e la sua durata, e che l'uso del colloquio clinico è inoltre necessario per determinare la natura della possibile associazione tra depressione paterna, comportamento del neonato e qualità del rapporto coniugale (Cox, 2005). Naturalmente, è indispensabile che tali colloqui vengano condotti da ricercatori con un'adeguata e certificata preparazione clinica.

Un altro importante limite riscontrabile nella metodologia della maggior parte degli studi analizzati è, a mio avviso, l'assenza di osservazione diretta dei comportamenti dei padri in TIN e nell'interazione con il bambino prematuro (in TIN e/o nei mesi/anni successivi alla dimissione, secondo gli obiettivi della ricerca). L'osservazione permette di vedere aspetti della relazione del padre con il bambino che non potrebbero emergere dai questionari e dai colloqui, in primo luogo la dinamica della comunicazione padre-bambino in tempo reale, che non può prescindere dal comportamento del bambino stesso. La possibilità di focalizzare l'attenzione sulla dinamica relazionale attraverso l'utilizzo di tecniche microanalitiche, e di seguire longitudinalmente lo sviluppo dei pattern di interazione, appare particolarmente importante anche per rilevare precocemente e monitorare eventuali indici di rischio: come abbiamo visto, la qualità dell'interazione padre-lattante nei primi mesi di vita può essere predittiva sia della qualità dell'attaccamento (Baldoni et al., 2010) che dello sviluppo emotivo-comportamentale del bambino (Ramchandani et al., 2013). Infine, l'osservazione diretta e continua nel tempo dei comportamenti dei padri (e delle madri) nelle diverse interazioni che possono vivere frequentando un reparto di TIN potrebbe essere proficuamente inclusa sia in progetti di ricerca sia nei protocolli operativi delle TIN stesse. Osservare non solo se e come i padri

interagiscono con il proprio bambino e la propria compagna, ma anche se e come interagiscono con il personale infermieristico e medico, con gli altri genitori, con gli psicologi permette di acquisire nuove informazioni sul loro stato emotivo, differenti da quelle ricavabili da strumenti self-report, che possono essere utilizzate nella progettazione di interventi di supporto.

IMPLICAZIONI PER I FUTURI SVILUPPI DELLA RICERCA E DEGLI INTERVENTI DI SUPPORTO

Nell'ambito della prematurità, la maggior parte delle ricerche e dei programmi di supporto finora realizzati si è concentrata principalmente o esclusivamente sul bambino e sulla madre. Tuttavia, i dati provenienti dagli studi che hanno rivolto l'attenzione anche alla figura del padre/ compagno concordano nel mostrarne la criticità del ruolo, e suggeriscono la necessità di considerare gli stati emotivi e i comportamenti di entrambi i genitori in relazione al bambino e al partner.

Dal punto di vista metodologico, l'analisi della letteratura disponibile ha inoltre evidenziato la necessità di utilizzare strumenti validati anche sui padri, e di incrementare l'osservazione diretta dell'interazione padre-bambino, anche longitudinalmente fin dal periodo perinatale in TIN e poi nel corso del/i primo/i anno/i di vita. Per esempio, i pochissimi studi che hanno analizzato l'interazione hanno mostrato un'associazione tra elevati livelli d'ansia del padre, scarsa sensibilità diadica nell'interazione e sviluppo di un attaccamento insicuro (Baldoni et al., 2010); tra depressione del padre e interazione emozionalmente distaccata (Sethna et al., 2015); e tra quest'ultima e un precoce sviluppo di comportamenti esternalizzanti (Ramchandani et al., 2013). Da pochi altri studi sappiamo tuttavia che il coinvolgimento dei padri nella cura dei propri figli a partire dalle visite ai neonati prematuri in TIN è un predittore della relazione padre-bambino e dello sviluppo cognitivo di quest'ultimo, oltre che di migliori vissuti dell'esperienza della paternità (Levy-Shiff et al., 1990; Yogman et al., 1995). Inoltre, dalla letteratura sui genitori di bambini nati a termine sappiamo che il coinvolgimento (*vs* mancato coinvolgimento) paterno può moderare (*vs* esacerbare) gli effetti negativi a lungo termine che la depressione materna nei primi anni di vita di un bambino potrebbe avere sullo sviluppo di quest'ultimo, particolarmente in termini di sviluppo di comportamenti internalizzanti (Mezulis, Hyde, & Clark, 2004). Infine, per quanto riguarda la

relazione coniugale, è stato mostrato che una relazione supportiva da parte dei padri/ compagni aiuta le madri a mitigare lo stress della neo-maternità (Robertson, Grace, Wallington, & Stewart, 2004).

Confermare e arricchire con nuovi dati empirici i risultati discussi in questa rassegna appare allora importante non solo per la scarsità di studi focalizzati sui padri dei bambini nati pretermine, ma anche per progettare interventi di supporto ai genitori dei neonati ricoverati in TIN, interventi anche specificamente rivolti ai padri (Koliouli & Zaouche Gaudron, 2017) che, come abbiamo visto, possono avere bisogni diversi da quelli delle madri.

L'importanza dell'attenzione alla specificità dei bisogni dei singoli genitori e delle coppie genitoriali è quanto sottolinea la letteratura sugli interventi di supporto alle madri che manifestano sintomi di depressione perinatale (Sockol, 2015; Sockol, Epperson, & Barber, 2011). Al riguardo sono interessanti le evidenze empiriche (Clatworthy, 2012) a favore degli interventi basati sul supporto alla relazione coniugale come risorsa; ad esempio, il dato che se in condizioni di particolari difficoltà nel periodo neonatale la relazione coniugale è problematica e i padri/ compagni non sono supportati/aiutati a sostenere la propria compagna e a svolgere una funzione protettiva nei confronti della diade madre-neonato, il rischio delle neomadri di sviluppare un disturbo depressivo è maggiore di quello delle neomadri single (Bilszta et al., 2008).

In questa ottica, prendersi cura dei padri dei neonati prematuri significa migliorare non solo la qualità di vita degli stessi e la relazione padre-bambino, ma anche il sostegno fornito dal padre alla madre e alla relazione madre-bambino. Il sostegno ai padri o comunque a entrambi i genitori "prematuri" ha come ulteriore esito il sostegno a un sano sviluppo neuropsicologico del bambino. Questo può essere attuato, per esempio, realizzando alcuni "atti preventivi di carattere ambientale" (Negri, 2012) che aiutano e sostengono il genitore nel difficile processo di avvicinamento sia al bambino nato pretermine che ai propri sentimenti. Tra questi "atti preventivi", particolarmente promettenti sembrano essere gli interventi di video-feedback per supportare la relazione genitori-neonato (Hoffenkamp et al., 2014), l'esperienza skin-to-skin attuata anche dai padri (Dall Helth & Jarden, 2013; Olsson, Eriksson, & Anderzén-Carlsson, 2017), periodici incontri di aggiornamento, spiegazione e confronto sulle condizioni di salute del bambino e sulle cure fornitegli

(Dienhart, 1998), e alcuni interventi educativi specificamente rivolti ai padri dei neonati gravemente pretermine, realizzati in un luogo diverso da quello delle termoculle (Garten, Nazary, Metze, & Bührer, 2013). Infine, a mio avviso potrebbe essere molto importante fornire ai padri informazioni mirate e comprensibili su alcuni dati empirici oggi disponibili, come per esempio quei dati di ricerca che rivelano che i neonati pretermine e gravemente pretermine rispondono alle voci dal tono basso, come quelle maschili, con un decremento della frequenza cardiaca tra le 32 e le 35 settimane di età gestazionale (Lee & White-Traut, 2014), e che quindi la voce del padre può e deve essere considerata un importante stimolo uditivo per i neonati ricoverati in TIN.

2

PARENTAL ENGAGEMENT AND EARLY INTERACTIONS WITH PRETERM INFANTS DURING THE STAY IN THE NEONATAL INTENSIVE CARE UNIT: PROTOCOL OF A MIXED-METHOD AND LONGITUDINAL STUDY [*]

INTRODUCTION

The preterm birth is a physiologically traumatic event in which infants' healthy neurological and emotional development is threatened (Doyle & Anderson, 2010; Johnson et al., 2009; Marlow, Wolke, Bracewell, & Samara, 2005; Mwaniki, Atieno, Lawn, & Newton, 2012; Talge et al., 2010). The preterm infants' developmental outcomes depend on biological and environmental risk factors (Feldman, 2007; Feldman & Eidelman, 2007; Greenberg & Crnic, 1988; Minde, 2000; Treyvaud et al., 2012). During the period of hospitalisation in the neonatal intensive care unit (NICU), environmental factors include physical (eg, excessive noise and light levels, painful procedures) and psychosocial (eg, prolonged parental separation) stressors (Maroney, 2003; Montirosso & Provenzi, 2015). Furthermore, preterm infants in incubators cannot experience the earliest mother–infant interactions which play a crucial role in early regulation of the stress response (Meaney & Szyf, 2005; Mendelsohn, 2005) and provide the foundations for the development of mutual regulation (Lavelli & Fogel, 2013). These skills are known to have a long-term impact on the functioning of affective relationships and healthy developmental outcomes (Feldman, 2007). The immature brain of a preterm infant is particularly vulnerable to the quality of these experiences (Lupien, McEwen, Gunnar, & Heim, 2009).

When a baby is born prior to the physiological term of 39 weeks, the process of preparation for parenthood is also interrupted ahead of time (Bruschweiler-Stern, 1998; Pancer, Pratt, Hunsberger, & Gallant, 2000). In this way, parents are also premature (Stern, Karraker, & Sopko, 2000). In this situation, parents are required to adjust their emotional structures in order to respond to the trauma of premature birth (Jotzo & Poets, 2005). This process is exceptionally important as the inability to

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respond to the trauma may have negative consequences on infant development (Goldberg & DiVitto, 1995; Siegel, 1982). Often, mothers require a recovery period after the premature birth. As a result, the father's ability to take an active part in the care of the infant from birth may be crucial (Lindberg, Axelsson, & Öhrling, 2007). However, fathers can face many obstacles that can impact on their roles as partners and fathers (Fegran, Helseth, & Fagermoen, 2008; Lundqvist, Westas, & Hallström, 2007; Pohlman, 2009), with possible negative consequences for their partners' affective states (e.g., depression, anxiety) (Carter, Mulder, Frampton, & Darlow, 2007; Robertson, Grace, Wallington, & Stewart, 2004; Zelkowitz, Bardin, & Papageorgiou, 2007), and for the development of parental relationships with the infants (Gutierrez-Galve, Stein, Hanington, Heron, & Ramchandani, 2015; Zelkowitz et al., 2007). Furthermore, the birth of a preterm infant might have a negative impact on self-representations of fathers during the child's stay in the NICU. Therefore, in order to adequately sustain fathers in their involvement in the infants' care, and in their transition to parenthood, specific supports are required from the NICU staff (Provenzi & Santoro, 2015). To date, however, only a few studies have focused their investigations on the father's role in preterm birth.

Past and recent studies exploring the quality of care given to preterm infants in the NICUs have shown that parent–preterm infant closeness during hospitalisation, particularly skin-to-skin contact with the mother, and interventions aimed at supporting parental involvement in infant care may be crucial to the well-being of the newborn (enhancing neurobehavioural outcomes) (Als et al., 2004; Feldman, Weller, Sirota, & Eidelman, 2002; Flacking et al., 2012; Reynolds et al., 2013; Welch et al., 2014, 2015), the establishment of parent–infant relationship (Goulet, Bell, Tribble, Paul, & Lang, 1998) and the parents' sense of confidence in providing care for their baby (Flacking et al., 2012). Other recent studies have shown that exposure to recorded or live maternal/parental voice has beneficial effects on physiological and behavioural states of preterm infants (Filippa, Devouche, Arioni, Imberty, & Gratier, 2013; Krueger, Parker, Chiu, & Theriaque, 2010; Lee & White-Traut, 2014), and predicts infants' vocalisations more than the voices of other adults (Caskey, Stephens, Tucker, & Vohr, 2011). However, very few studies have focused on mothers' (Coppola & Cassibba, 2010; Keren, Feldman, Eidelman, Sirota, & Lester, 2003; Vasa et al., 2014) or both parents' (Zelkowitz et al., 2007) spontaneous

behaviours with their infants in the NICU: They have observed caregiving routines before discharge, when the baby was allowed to spend some time out of the incubator. To the best of our knowledge, only one study (Welch et al., 2012) has been conducted on maternal behaviours addressed to the preterm infant hospitalised in the NICU, particularly when the infant was distressed, and on how the maternally mediated sensory experience of the infant may impact the infant's behavioural states and mother–infant interaction. The present study expands the focus to maternal and paternal communicative behaviours addressed spontaneously to the preterm infant in a heated cot in the NICU.

It is important to acknowledge that parents of preterm infants are at great risk of psychological distress and depressive symptoms (Carter et al., 2007; Davis, Edwards, Mohay, & Wollin, 2003; Lefkowitz, Baxt, & Evans, 2010) that can interfere with their sensitivity to infant cues (Muller-Nix et al., 2004; Zelkowitz et al., 2007). For instance, it has been found that mothers who experience traumatic stress in the perinatal period tend to be less sensitive and more controlling at 6 months of infant's corrected age (CA) (Welch et al., 2012), and that parental depression—as an inhibitory factor of good parent–infant interactions—has a negative impact on the early neurobehavioural (Treyvaud et al., 2009) and socioemotional (Treyvaud et al., 2010) development of the infant. Some studies focused on mother–preterm infant interaction have shown that mothers of preterm infants tend to look, vocalise and touch their infants affectionately less often than mothers of full-term infants; in addition, preterm infants tend to spend less time in alert state, to be more passive as social partners and to send more unclear communicative signs, so that parent–infant interactions are less coregulated than with full-term infants (Feldman & Eidelman, 2007; Forcada-Guex, Borghini, Pierrehumbert, Ansermet, & Muller-Nix, 2011; Montirosso, Borgatti, Trojan, Zanini, & Tronick, 2010) and a scant dyadic synchrony persists at 12 months of CA (Sansavini et al., 2015). However, studies (Borghini et al., 2014; Forcada-Guex et al., 2011; Forcada-Guex, Pierrehumbert, Borghini, Moessinger, & Muller-Nix, 2006; Korja, Latva, & Lehtonen, 2012; McCormick, Workman-Daniels, & Brooks-Gunn, 1996; Montirosso et al., 2010; Reynolds et al., 2013; Sansavini et al., 2015) focused on mother–preterm infant interaction have also shown inconsistent findings (Korja et al., 2012), though part of this discrepancy could be explained by the use of different observational methods and techniques (eg,

rating scales *vs* microanalytic coding systems). Moreover, almost all these studies have looked at interactive and socioemotional behaviours after discharge from the NICU, over the infant's first 2 years (usually at 3 or 6, 12, 18 and/or 24 months of CA). And yet, to the best of our knowledge, no study has microanalytically coded mother–infant and father–infant interactions during a stay in a level III NICU.

Objectives

In light of the above, the first objective of this study is to examine maternal and paternal communication with their preterm infant in a heated cot in the NICU, analysing the presence of interactive contingency between parental communicative behaviours and infant gaze direction and expression indexing the infant's engagement in the interaction. 'Interactive contingency' is defined as the predictability of each partner's behaviour from that of the other, over time (Beebe et al., 2011; Fogel, 1992).

A second objective, consequent on the first, is to assess whether early interactive contingency between mother/ father and preterm infant in the NICU predicts positive outcomes in the mother–infant/ father–infant relationship and infant development at 4 months CA.

A third objective, parallel to the first, is to investigate the emotional impact of the premature birth on parents, particularly on fathers. This objective will be accomplished by examining a number of different factors, namely, the ways through which the fathers' perception of their parental role (or absence of role) influences their engagement in caring the baby, their support to the partner and the mother–infant relationship.

Finally, the last and overarching objective is to examine the relationship between (1) maternal and paternal emotional conditions after the premature birth, (2) the infant perinatal risk factors and (3) the quality of mother–infant and father–infant interactions during the stay in the NICU, and later, at 4 months CA.

METHOD AND ANALYSIS

This is a mixed-method, observational and longitudinal study. The methodological strategy will include: (1) ethnographic observation in a level III NICU located in Northern Italy for the duration of data collection over an 18-month period; (2) one

3-minute video recording of mother–infant and father–infant face-to-face interaction in the NICU (with the preterm infant in a heated cot) between 34 and 35+6 weeks postmenstrual age (PMA); (3) a semi-structured interview with the fathers during the infants' stay in the NICU; (4) one 3-minute video recording of mother–infant and father–infant face-to-face interaction in the Social and Language Development Laboratory, University of Verona, at 4 months CA; (5) a self-report questionnaire on depression and a questionnaire on the quality of the couple relationship submitted to the parents at the approximate times of the video recording sessions.

Selection criteria

Inclusion criteria

Infants are eligible to be included in the study if they meet the criterion of: (1) birth before 34 weeks PMA. The reason for choosing a cut-off of 34 weeks (instead, for instance, 32 weeks, ie, the cut-off for very preterm birth) is to increase the number of participant families, given the difficulties of recruitment in the NICU. Furthermore, this criterion is in line with other studies on maternal caregiving behaviour during the stay in the NICU (Welch et al., 2012), and on mother–preterm infant interaction after discharge (Beebe et al., 2016; Forcada-Guex et al., 2011).

Mothers and fathers are eligible to be included in the study if they meet the following criteria: (1) both were born and grew up in Italy; (2) both have given their consent to participate in the study.

Exclusion criteria

Infants will be excluded from the study if: (1) they have perinatal asphyxia; (2) they have neurologic pathologies (periventricular leucomalacia up to stage I and/or intraventricular haemorrhage up to stage II); (3) they experience malformation syndromes and/or major malformations; (4) they have sensory deficits (detected by regular medical checks performed during hospitalisation); (5) they present metabolic or genetic disease.

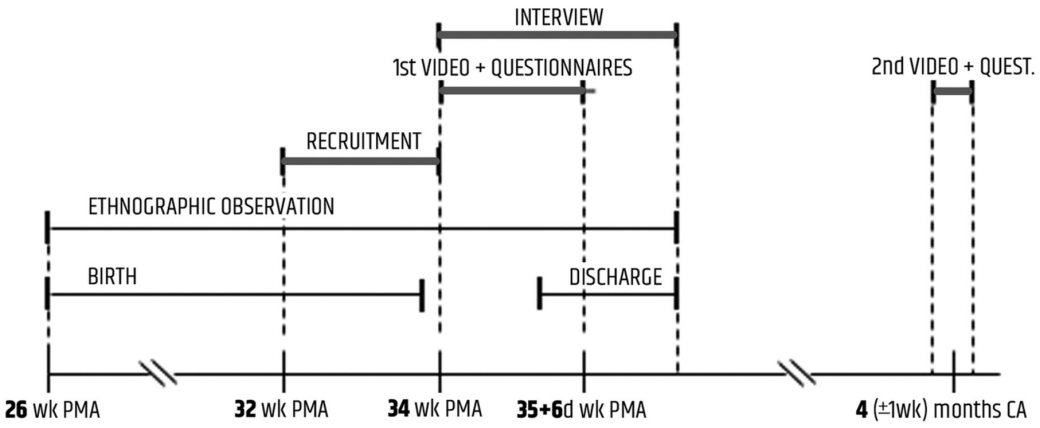
Mothers and fathers will be excluded from the study if: (1) they are not of Italian origin; (2) they have a psychiatric illness; (3) they have issues with drug or substance abuse; (4) they are not living together; (5) they are adopting parents; (6) they are a same-sex couple.

To participate in the study it is necessary that both parents and infants meet the inclusion and exclusion criteria.

Procedure

The timeline of the whole procedure, beginning with ethnographic observation even before the participants' recruitment, is depicted in Figure 2.1.

Figure 2.1 *Timeline*



Note. Study timeline. CA, corrected age; PMA, postmenstrual age; wk, weeks.

Ethnographic observation in NICU

Ethnography is a methodological approach which involves the researcher participating overtly in the lives of people, in this case in the NICU (Dykes & Flacking, 2015; Flacking & Dykes, 2013). Ethnographers work by 'watching what happens, listening to what is said and/or asking questions through informal and formal interviews and collecting documents' (Atkinson & Hammersley, 2007). Ethnographic observation was selected over other methods to inform this study and to prepare the best conditions for accomplishing this study, as it aims (1) to minimise the risks potentially associated with having an observing researcher within the observed social context (eg, perception of intrusiveness, minor spontaneity during videotaped interactions and/or interviews) and (2) to obtain rich qualitative data from participant observation in social interactions which take place in that context. This is even more important in a stressful context such as the NICU, where social interactions are particularly vulnerable.

Initially, the researcher (the psychologist–psychotherapist and PhD student who is the first author) goes through a familiarisation period with the parents in the NICU. During this period and later on too, the researcher observes the interactions between (1) parents and their preterm infants, (2) mothers and fathers, (3) parents and staff (nurses, neonatologist and psychologist) and (4) infant and nurses; he attends meetings between neonatologists, observes conversations between staff and parents and he also holds informal talks with mothers and fathers. Then the researcher presents the research project to the parents who meet the inclusion criteria and 'follows' the recruited families until the infant's discharge from the NICU. We think that qualitative data obtained from ethnographic observation can offer a main contribution to the understanding of the NICU-related stress and the impact of preterm birth and ensuing hospitalisation on mothers' and fathers' emotional experiences, their relationship and how they cope with the stay in the NICU: all factors that might affect parent–infant relationship and the quality of mother–infant and father–infant interactions. Finally, ethnographic observation is used to identify the best conditions—infant's behavioural states, time, position and so on— for video recording parent–infant face-to-face interaction (with the preterm infant in a heated cot) in the NICU.

Recruitment

All parents (mothers and fathers) of preterm infants born between 17 September 2015 and 31 March 2017 and hospitalised at level III NICU of the Borgo Roma Hospital—Azienda Ospedaliera Universitaria Integrata Verona (northern Italy) are invited to participate in the study. The researcher invites the parents to participate during the stay in the NICU, when the infant's medical condition has been stabilised: this usually happens around or after 32–33 weeks PMA; therefore, the recruitment of the study participants takes place from 32 to 34+6 weeks PMA. A minimum of 20 mother–infant and 20 father–infant dyads will be recruited. This sample size is adequate to perform parametric statistical tests, and is in line with the sample size of previous Italian studies (Coppola, Cassibba, Bosco, & Papagna, 2013; Coppola & Cassibba, 2010; Sansavini et al., 2015; Zuccarini et al., 2016) in the field.

Parent–infant interaction in NICU

Between 34 and 35+6 weeks PMA, the mother's spontaneous social stimulation addressed to the infant in a cot with a radiant heater (an open cot with an overhead heating source) and the infant's responses are videotaped during a 3-minute interaction. Then the infant rests for at least 5 min. Afterwards, the father's social stimulation addressed to the infant and the latter's responses are videotaped over a 3-minute interaction. The date and timing for video-recording parent–infant interaction depends on: (1) the infant's medical conditions, (2) the mother's and father's restrictions on the time available to stay in the NICU, (3) the infant's behavioural states (for instance, if the infant is sleeping or crying the video recording is postponed).

Qualitative interviews in NICU

Previous studies that have conducted interviews with fathers of premature infants provide a coherent picture. The preterm birth of an infant is a traumatic event for the fathers (Tracey, 2000), who have been found to show low/moderate levels of adjustment to preterm birth and a limited assumption of paternal role (Provenzi et al., 2016). Research also suggests that fathers experience a sense of lack of control (Arockiasamy, Holsti, & Albersheim, 2008). Often fathers hide these emotional difficulties from healthcare providers (Arnold et al., 2013; Pohlman, 2009), but reported a need to share (Coppola et al., 2013) with someone who can understand (Lindberg et al., 2007). The first moments with the preterm infants evoke a 'rollercoaster of emotions' (Arnold et al., 2013) which can lead fathers to become emotionally, and sometimes physically, distanced from the situation. After the initial shock and trauma, research has shown that fathers can experience emotional closeness (Lundqvist et al., 2007) with their infants during hospitalisation in the NICU.

Before the infant's discharge from the NICU, fathers are contacted to participate in a semistructured interview. The interviews allow for a deeper understanding of the emotional impact that the premature birth has on fathers. The topic guide includes the following areas: the first time that the father saw and/or touched his baby; the bond with the baby; caregiving activities; feelings associated with seeing the

partner/mother care for, feed or cuddle their baby; space for one's own emotions when supporting and assisting the partner; work and management of their responsibilities in the outside world during the period of hospitalisation in NICU; the quality of the couple relationship during pregnancy and the period of hospitalisation in NICU; and how their feelings towards the baby change from his/her preterm birth to the time of discharge from the NICU.

In addition to the fathers who will participate in the parent–infant interaction, we will recruit an additional number of fathers who meet the inclusion criteria for parents and infants. These additional participants will not need to meet the infants' exclusion criteria. This will allow the study to have a more representative sample of daily clinical reality.

Interviews are carried out in a private room in the NICU, and are digitally recorded.

Questionnaires in NICU

In approximate times with videotaping, parents are asked to complete the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) to assess symptoms of depression and the Dyadic Adjustment Scale (DAS; Spanier, 1976) to assess the quality of the couple's relationship.

Parent–infant interaction after discharge

At 4 months CA, 3 min of mother–infant and 3 min of father–infant spontaneous face-to-face interaction are videotaped in the Social and Language Development Laboratory, University of Verona. The infant is seated in an infant seat on a table; the mother/father, seated opposite the infant, is asked to play with the baby as she/he would at home. Two video cameras are used to generate a split-screen view of the interaction.

Questionnaires after discharge

Parents are asked to complete the CES-D Scale and the DAS Scale again at 4 months CA, in order to assess symptoms of depression and the quality of the couple's relationship around 5 months after discharge from the NICU.

Further data on parents and infants

Data are collected on the parents' demographic and socioeconomic characteristics (age, marital status, years of formal education, occupation, family composition and social network), on the mothers' gynaecological and obstetric history, on their infant's neonatal characteristics (gestational age, weight, height and head circumference) and on the severity of the perinatal problems (evaluated using the Perinatal Risk Inventory; PERI; Scheiner & Sexton, 1991) will be collected. Information are also collected regarding the infant's hospitalisation and developmental outcomes (assessed after discharge in a follow-up based on a paediatric examination including a somatic and neurological status assessment).

Data analysis

Video coding

Mother/father's and infant's behaviours from videotaped interactions are coded microanalytically, using units of 1 second (Beebe et al., 2010; Cohn & Tronick, 1988; Tronick & Weinberg, 1990). Parent and infant behaviours are coded independently in ordinalised scales required for performing time series analysis (see below).

With regard to parent–infant interactions in the NICU, both parent and infant behaviours are coded in composite categories of Engagement Scales, recently devised by Lavelli & Beebe (2016) the Mother/Father Engagement Scale, ordinalised from a high of maternal affiliative behavior (Feldman & Eidelman, 2007) (composed of 'gaze at infant face + affectionate or static touch + affectionate talk and/or positive facial affect') to a low of 'gaze off'; and the Infant Engagement Scale, ordinalised from high levels of 'gaze at parent face + smile' and 'gaze at parent face + active movements' to a low of 'negative expression'. Communicative modalities included in maternal affiliative behaviour have been described as the main components of the maternal postpartum repertoire in humans and as predictor of positive outcomes (Feldman & Eidelman, 2007). Among these modalities, in the NICU context maternal/paternal static touch as firm and sustained touch (Coppola & Cassibba, 2010) is an effective and salient way to be in contact with the preterm infant, given the loss of physical contact with the mother and the prolonged separation that results from the NICU experience; therefore, otherwise that with full-term infants, static touch is not considered less optimal than affectionate touch.

With regard to parent–infant face-to-face interaction at 4 months CA, parents' behaviours are coded according to their gaze direction (on-off the infant's face); mother/ father touch, ordinalised from a high of 'affectionate' to a low of 'intrusive' using the Maternal Touch Scale (Beebe et al., 2010) adapted to the Italian caregiving culture; mother/father facial affect, based on Beebe et al. (2010) and ordinalised from a high of 'mock surprise' to a low of 'negative'. Infants' behaviours are coded according to their gaze direction (on-off the infant's face); infant vocal affect, adapted from Beebe et al. (2010) and ordinalised from 'high positive' to 'angry protest/cry'; infant facial affect, adapted from Beebe et al. (2010) and Lavelli & Fogel (2013) and ordinalised from 'high positive' to 'negative'.

The inter-rater reliability (Cohen's κ) for maternal/ paternal/ infant behaviours will be calculated on 20% of the videotapes, which will be coded by a second researcher who is blind to the aims of the study.

Quantitative data analysis

To explore the possible presence of early interactive contingency between parental communicative behaviours and infant gaze direction and expression (objective 1), a sequential analysis (conditional probabilities, GSEQ software; Bakeman & Quera, 1995) will be computed to examine the probabilities that the infant gazes at the parent's face with positive/neutral expression when the mother/ father provides affiliative behaviour, and vice versa, that the mother/father provides affiliative behaviour when the infant shows to be engaged or ready for social stimulation. Furthermore, since the conditional probabilities analysis highlights specific associations of behaviours but not how any interactive contingency unfolds during the entire segment of videotaped interaction, a time-series modeling (Singer & Willett, 2003) of the moment-to-moment sequence of behaviours will be performed to explore the parents and infants capability to coordinate their behaviours at any level of engagement versus disengagement across the videotaped session. Self-contingency will be computed as exploratory variable of the timeseries analysis.

With regard to the second objective, that is, to assess whether higher engagement coordination (interactive contingency) between mother/ father and preterm infant in the NICU predicts higher engagement coordination (interactive contingency) during parent–infant face-to-face interaction at 4 months CA, a

multilevel time-series analysis (Singer & Willett, 2003) will be performed. This analysis will allow to create indices of self-contingency (autocorrelation) and interactive contingency (cross-correlation) using the different possible pairs of parent–infant communication modality coded in behavioural scale (eg, infant gaze–mother/father gaze; infant vocal affect–mother/father touch, etc): these results will shed light on the process of mutual regulation during interaction at 4 months CA. Then, to assess the hypothesis that interactive contingency between parent and infant in the NICU is longitudinally related to the quality of their relationship at 4 months CA, it will be necessary to create an Infant Engagement Scale at 4 months, through an algorithm, as well as a Mother/Father Engagement Scale from their interaction at 4 months, in order to have behavioural scales which are comparable with those used for coding interaction in the NICU.

Finally, the hypothesis of early interactive contingency as a predictor of later mutual engagement will be also assessed by a linear regression analysis. A set of linear regression analyses will be performed using different study variables as possible predictors of quality in mother–infant and father–infant interactions at 4 months CA, in order to contribute to investigate the relationship between the different variables (objective 4).

Qualitative data analysis, and following mixed analyses

A thematic content analysis (Lavelli, Döge, & Bighin, 2016; Moscardino, Axia, Scrimin, & Capello, 2007) of the fathers' interviews will allow us to investigate the emotional impact of the premature birth on fathers (objective 3). To this aim, results will be integrated with field notes taken during ethnographic observation and results from the self-report instrument assessing symptoms of depression. All transcripts will be verified by one researcher before data analysis by listening to the audio recording and checking for accuracy of the written transcript. The transcripts will be analysed using a thematic content analysis for each question in the interview. Thematic analysis is a qualitative method for identifying, analysing and reporting themes within data (Braun & Clarke, 2006). Transcripts will be read and reread so as to become familiarised with the data. Data will be managed using NVivo 11 (QSR International, USA). The first author will use an initial open coding to allow for the

emergence of recurrent themes across fathers. Response patterns that will be relevant across all fathers will be coded and organised in thematic categories (along with verbatim quotes which illustrate each theme) (Boyatzis, 1998; Braun & Clarke, 2006). All codes will be compared and contrasted, and then examined and discussed by the first author and two other researchers to identify meaningful categories or emergent themes. Codes with a single occurrence will be removed. Coding reliability and face validity achieved by remaining codes will be checked. A final coding scheme (defining each theme with verbatim quotes) will be collated. All transcripts will be recoded by the first author using the coding scheme. The inter-rater reliability will be calculated on 20% of the transcriptions, which will be coded by a second researcher.

A bivariate correlation analysis between theme frequencies emerging from the fathers' interviews, the scores questionnaires indexing symptoms of maternal/ paternal depression and the quality of the couple relationship, the scores from the PERI and behavioural measures of quality in parent–infant interaction such as maternal/paternal affiliative behaviour, early interactive contingencies and mutual engagement at 4 months, will be performed to assess possible concurrent and predictive associations, and patterns of association, between study variables (objective 4).

Qualitative data will contribute to explain results from statistical analyses.

ETHICS AND DISSEMINATION

Description of risks

There will be no risks associated with participation in any aspect of the described study.

Informed consent

Before taking part in the study all mothers and fathers will receive written and oral information about the content and extent of the study. If they are willing to participate, they will sign the informed consent form. They will be able to withdraw from the study at any time without explanation, without any consequences to the care of the family at the Azienda Ospedaliera Universitaria Integrata Verona.

Data protection

All the video files, coding sheets, audio files, audio transcriptions, questionnaires and documents, will be provided with a special alphanumeric code and will not contain any identifying information. The electronic data will be stored on a computer that is password protected. The paper materials will be stored in a locked archive. Only members of the study team will have access to the data.

Scientific, clinical and social impact

To the best of our knowledge, this is the first research project focused on maternal/paternal communicative behaviours addressed spontaneously to the preterm infant hospitalised in the NICU, and their effects on the infant's behaviours and engagement in social interaction. Therefore, this research project will provide new knowledge in the particular area of: (1) the quality and modalities of maternal and paternal communication with the preterm infant in the NICU when the infant is in a cot with a radiant heater; (2) the influence of maternal/paternal social stimulation on infant's behavioural states, and the associated potential benefits for the preterm infant; (3) the quality and modalities of paternal support to the mother/ partner, and the ways in which this influences the mother–infant relationship. In addition, results from this project will increase the very scant knowledge about the presence of early interactive contingencies between mother/father and preterm infant in the NICU, and their possible predictive role of positive outcomes in mother–infant and father–infant relationship.

Knowing more about under what conditions preterm infants hospitalised in the NICU could benefit from parental social stimulation has important clinical implications that could inform nursing practice and psychological support. First, this knowledge highlights possible factors on which early intervention programmes in the NICU should focus in order to support the development of healthy mother–infant, father–infant and mother–father relationships. Second, analysing the quality of maternal/ paternal communication with the preterm infant in a heated cot allow for the identification of early indices of risk in the developing mother/father–preterm infant relationship. This may in turn help to improve the identification of mother/father–infant dyads who are at-risk and who might benefit from early preventive intervention. With regard to this, staff members in the NICU might become more aware of individual differences in mothers and fathers that could facilitate or interfere with the parents' ability to provide sensitive care for their preterm infants.

3

EARLY INTERACTIVE CONTINGENCIES BETWEEN PARENTS AND PRETERM INFANTS IN THE NICU *

INTRODUCTION

Newborns are biologically equipped to selectively interact with others (Ammaniti & Gallese, 2014; Lavelli, 2007). Such pre-adaptation of the newborn to social interactions (Emde, 1998; Nagy, 2008; Schaffer, 1984) concerns both expressive and perceptive capabilities. With regard to the perceptive capabilities, there is a remarkable continuity between pre- and postnatal development (Kurjak et al., 2004; Stanojevic, Kurjak, & Salihagić-Kadić, 2011; Stanojevic, Zaputovic, & Bosnjak, 2012). For example, the fetus develops a tactile sensitivity from the beginning of the 9th gestational week (Piontelli et al., 1997, 2010) and she/he responds to sound from the 19th gestational week (Burnham & Mattock, 2010; Hepper & Shahidullah, 1994; Lasky & Williams, 2005). A recent study found that the fetus responses to maternal touch on the abdomen with a selective increase of arm, head, and mouth movements in the 21st-25th gestational weeks (Marx & Nagy, 2015, 2017). Furthermore, starting from around the 25th gestational week, the fetus has the ability to process visual-perceptual information and she/he shows a preference to engage with face-like stimuli (Reid et al., 2017). Thanks to the fact that cognitive-motor control of the eyes is relatively advanced when contrasted with other motor abilities (Bridgeman, 1983; Lerner, 2015), a just-born neonate is able to respond selectively – through gaze orientation – to the various social stimuli offered by her/his caregivers. Indeed, in Western cultures eye contact is the most powerful way to establish a communicative connection between humans (Akechi et al., 2013; Farroni, Csibra, Simion, & Johnson, 2002; Senju et al., 2012). From as early as the first days of life neonates have a preference for face-relevant stimuli (Farroni et al., 2005; Farroni, Menon, & Johnson, 2006), for faces that engage them in mutual gazing (Blass, Lumeng, & Patil, 2007; Rigato, Johnson, Faraguna, & Farroni, 2011), and for familiar faces over

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strangers' faces (Barry-Anwar, Burris, Graf Estes, & Rivera, 2017; Bushnell, 2001). The infant's gaze is the central mode of establishing a communication with caregivers (Scholmerich, Leyendecker, & Keller, 1995; Yale, Messinger, Cobo-Lewis, & Delgado, 2003; Weinberg & Tronick, 1994) and gaze remains the most important way of communication during adult interpersonal interactions (Ho, Foulsham, & Kingstone, 2015; Holler & Kendrick, 2015; Brône, Oben, Jehoul, Vranjes, & Feyaerts, 2017) – in which the will to interact *vs.* the will to interrupt an interaction are enshrined respectively by shared gaze and gaze break.

A continuity between pre- and postnatal life also concerns smiles. Occasional endogenous smiles appear around the 15th gestational week (Piontelli, Ceriani, Fogliani, & Kustermann, 2010; Kawakami & Yanaihara, 2012) and they increase their frequency until the 30th gestational week (AboEllail, Kanenishi, Mori, Mohamed, & Hata, 2017; Sato et al., 2014); then they decrease until 1-year of age (Kawakami, Kawakami, Tomonaga, & Takai-Kawakami, 2009). It is difficult to identify when social smile emerges; however, it is spontaneously performed by preterm neonates starting from the 30th week of post-conceptional age (Dondi et al., 2008). Newborn's social smiles increase in response to prolonged tactile communication during interactive wake in the first few hours after birth (Cecchini, Baroni, Di Vito, & Lai, 2011). Indeed, starting from their birth, both term and preterm infants are able to modify their own state and movement patterns in response to caregiver's behavior (Dominguez, Devouche, Apter, & Gratier, 2016; Minde, Marton, Manning, & Hines, 1980; Oehler, Eckerman, & Wilson, 1988). Furthermore, as early as the first weeks of life mother-infant communication works as a mutual adaptive system (Lavelli & Fogel, 2005, 2013).

However, only a few studies (Coppola & Cassibba, 2010; Feldman & Eidelman, 2007; Keren, Feldman, Eidelman, Sirota, & Lester, 2003) have focused on mothers' spontaneous behaviors with their preterm infant in the NICU, and this was when the baby was allowed to spend some time out of the incubator, before discharge. To the best of our knowledge, no studies have focused on parents' communicative behaviors addressed to the preterm infant in the incubator or heated cot in the NICU, and the latter's responses. The aim of this study was to examine the presence of interactive contingencies between parental communicative behaviors with their preterm infant in a heated cot in the NICU and infant behaviors, particularly gaze direction, at around 34-35 weeks of postmenstrual age. 'Interactive contingency' is defined as the predictability of each partner's behavior from that of the other, over

time (Beebe et al., 2011; Fogel, 1992). An additional aim was to compare mothers' and fathers' communicative behaviors and possible mother-infant and father-infant interactive contingencies.

METHOD

Participants

Twenty mother–infant and twenty father–infant Italian dyads participated in the study. All these twenty infants were healthy preterm born <34 weeks of gestational age and hospitalized in the NICU. Exclusion criteria included perinatal asphyxia, neurologic pathologies (periventricular leucomalacia up to stage I and/or intraventricular haemorrhage up to stage II), malformation syndromes and/or major malformations, sensory deficits, metabolic or genetic disease. Families were recruited at the level III NICU in Verona (Italy). To participate in the study it was necessary that both parents signed written informed consent. Parents were eligible to be included in the study if they were biological parents, were born and grew up in Italy, were living together, and had no psychiatric illness and/or habitually used or abused drug or substance. Demographic variables are detailed in Table 3.1.

Table 3.1 *Demographic and Clinical Variables*

	(n = 20)
Birth weight (kg), *M (SD)*	1.45 (.41)
Birth week, *M (SD)*	31.65 (2.35)
Infant gender, *n (%)*	
Males	8 (40)
Females	12 (60)
Infant weight (kg) at videotaped, *M (SD)*	1.99 (.25)
Mother's age, *M (SD)*	36.93 (4.95)
Father's age, *M (SD)*	39.07 (4.91)

Procedure

Mother–infant and father–infant dyads were videotaped during spontaneous face-to-face communication in the NICU, between 34 and 35+6 weeks postmenstrual age (M PMA 35.3 weeks, SD 0.4, range 34.7–35.9). The infant was in a cot with a radiant heater. The parent, who was face-to-face with (or near and with her/his own face turned towards) the infant, was asked to interact with the infant freely; no specific

instructions were given.[1] Mother(father)–infant interaction was videotaped for at least 3 min, and filming started when the infant was in an awake and calm state. After a baby's rest period of at least 15 min without any social stimulation, also father(mother)–infant interaction was videotaped. The order of interaction with mother and with father was counterbalanced.

Coding

Parent's and infant's behaviors from consecutive 3 min videotaped interactions were coded microanalytically, using units of 1 s. (Beebe et al., 2010; Cohn & Tronick, 1988; Feldman, 2006; Tronick & Weinberg, 1990). Coding was conducted using the Parent-Preterm Infant Coding System recently devised by Lavelli and Beebe (2016), a system for assessing parent-preterm infant interaction in the NICU. The coding system includes the *Parent Engagement Scale,* comprised of 8 mutually exclusive categories ordinalized from the most complete configuration of *Parental Affiliative Behavior* (Feldman et al., 2002; Feldman & Eidelman, 2007) (i.e., co-occurrence of Gaze at Infant, Affectionate Touch, Affectionate Talk, and Positive Facial Affect) to Gaze Off, and the *Infant Engagement Scale,* comprised of 7 mutually exclusive categories ordinalized from Gaze On + Smile to Negative Expression. See Tables 3.2 and 3.3 for detailed descriptions.

Reliability

Interobserver reliability for infant behaviors and parental behaviors coding was calculated on a random sample of 8 out of 40 sessions (20%). The average Cohen's kappa was .84 for infant behaviors, and .81 for parental behaviors.

Statistical Analysis

A sequential analysis (Generalized Sequential Querier; Bakeman & Quera, 1995) was performed on infant's behaviors as *target* and maternal/paternal behaviors as *given*, and *vice versa*, to assess the possible presence of early interactive contingencies (any

[1] With regard to this, it is necessary to take into account that within the NICU's routine practice parents are provided with information, both in oral and written forms, about the most appropriate behaviors to undertake during interaction with their preterm baby, according to her/his gestational age. For example, the 'parents information booklet' (Polinari, Cunial, & Cazzola, 2013) provides parents with a range of behaviors that should be undertaken with their babies in the different phases of the NICU journey, such as "At 30-32 weeks old I will be able to see you at a distance of 20-30 centimeters", and, "You must use a firm but gentle touch, without rubbing".

significant transitional probability) between maternal/paternal and infant behaviors. The analysis was performed on both mother-infant dyads as a group and father-infant dyads as a group, and on each dyad separately. The significance of transitional probabilities was assessed using the adjusted residuals statistics.

Paired t-tests were used to compare mothers' and fathers' communicative behaviors addressed to the preterm infant and infant's behaviors shown during mother-infant and father-infant interactions.

Table 3.2 *Parent Engagement Scale*

Behavioral configuration	Description
8.[a] Gaze on–Affectionate Touch–Affectionate Talk–Positive Facial Affect	Parent is gazing at the infant, touching and talking to him/her in an affectionate way. Affectionate Touch includes still warm touch,[b] stroking, and stroking combined with gentle tactile or gentle kinesthetic stimulation. Affectionate Talk includes "baby talk" vocalizations. Facial expression is positive.
7.[a] Gaze on–Affectionate Touch–No Talk–Positive Facial Affect	Parent is gazing at the infant, touching him/her in an affectionate way (see above). Facial expression is positive.
6.[a] Gaze on–No Touch–Affectionate Talk–Positive Facial Affect	Parent is gazing at the infant, without touching him/her, but talking to her/him in an affectionate way including "baby talk". Facial expression is positive.
5. Gaze on–Affectionate Touch–No Talk–Neutral Face	Parent is gazing at the infant, touching him/her in an affectionate way (see above). Facial expression is neutral
4. Gaze on–No Touch–No Talk–Positive Facial Affect	Parent is gazing at the infant, without touching and/or talking to her/him, but showing positive facial expression.
3. Gaze on–No Touch–Talk/No Talk–Neutral Face	Parent is gazing at the infant, without touching or talking to him/her in an affectionate way. She/he could talk in a non-affectionate mode including flat, adult-directed speech. Facial expression is neutral.
2. Gaze on–Non-Affectionate Caregiving Touch–Talk/No Talk–Neutral Face	Parent is gazing at the infant, touching her/him in a non-affectionate way including caregiving or rough touch. She/he could talk in a non-affectionate mode including flat, adult-directed speech. Facial expression is neutral.
1. Gaze off	Parent is gazing away from the infant.

Note. [a] Behavioral configurations #8, 7, and 6, that is, a combination of Gaze at the infant, Positive Affect, Affectionate Touch and/or Affectionate Talk, constitute the *Parental Affiliative Behavior* (Feldman et al., 2002; Feldman & Eidelman, 2007).

[b] In the NICU context parental Static Touch as firm and sustained touch is an effective and salient way to be in contact with the preterm infant (Welch et al., 2012, 2015), given the loss of physical contact with the parent and the prolonged separation that results from the NICU experience; therefore, otherwise that with full-term infants, Static Touch is considered as Affectionate Touch.

Table 3.3 *Infant Engagement Scale*

Behavioral configuration	Description
7. Gaze on–Smile	The infant is gazing at the parent's face and smiling.
6. Gaze on–Face neutral	The infant is gazing at the parent's face with no particular facial action (except for reflexes and vegetative movements).
5. Gaze on environment	The infant is gazing at the surrounding environment.
4. Gaze off–Face neutral	The infant's gaze is oriented elsewhere from the parent's face but not active (i.e., eyes are open but gaze is vague); no particular facial action (except for reflexes and vegetative movements).
3. Gaze off–Head averted	The infant is keeping his/her head and gaze averted from parent's face.
2. Eyes closed	The infant's eyes are closed. Eyes closed for vegetative movements such as sneezing and yawning are included.
1. Negative Expression	The infant is showing any vocal and/or facial negative expression (grimace, pre-cry, fussy, crying) and/or body negative expression (squirmy, agitated), either with gaze-on or off, and eyes open or closed.

RESULTS

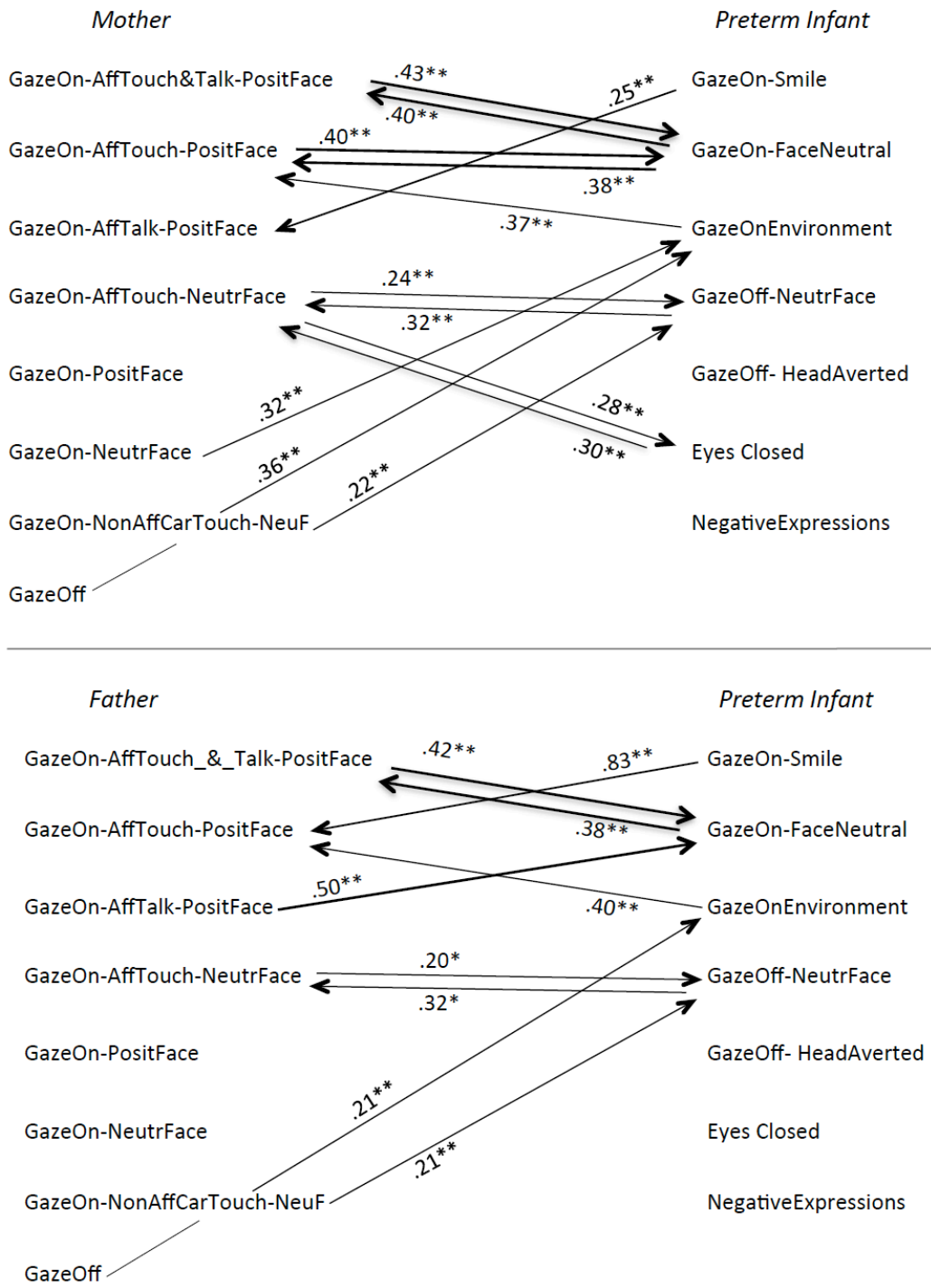
Early Interactive Contingencies (Aim 1)

With regard to our main aim, sequential analysis performed using a lag of 1 s revealed significant transitional probabilities between parent's and infant's behaviors indicating the presence of early interactive contingencies, during maternal and paternal communication with the preterm infant in a heated cot in NICU.

Figure 3.1 synthesizes and compares the real-time transitional probabilities between maternal and infant behaviors and paternal and infant behaviors found to be significant.

During both mother–infant and father-infant interactions the presence of parental Affiliative Behavior at the optimal level (i.e., co-occurrence of maternal/paternal Gazing at infant with Positive Affect and Affectionate Touch and Talk) affected the occurrences of infant Gazing at the parent's face which, conversely, contributed to maintain parental Affiliative Behavior. This bidirectional sequential pattern of communication was significant for the majority of mother–infant and father–infant dyads. Furthermore, Figure 1 also shows that the infant's Gazing at the

Figure 3.1 *Real-Time Transitional Probabilities between Maternal and Infant Behaviors and Paternal and Infant Behaviors*



Note. Mean transitional probabilities between mother's and preterm infant's behaviors, and father's and preterm infant's behaviors during 3 min of maternal and paternal communication with the preterm infant in a heated cot, in the NICU. Only transitional probabilities found to be significant are included (* $p < .05$; ** $p < .01$)

parent's face was significantly linked also with maternal Affectionate Touch co-occurring with Gazing at infant with Positive Affect, in another bidirectional sequential pattern, and it was significantly elicited by paternal Affectionate Talk co-occurring with Gazing at infant with Positive Affect. It seems that the presence of parental Affectionate Touch without expression of Positive Affect was not enough to maintaining or eliciting the infant engagement, because during both mother–infant and father–infant interactions it was significantly associated with the infant's gaze oriented elsewhere or even – during mother-infant interaction – with the infant's eyes closed.

Finally, 7 of the 20 infants (35%) smiled while they were gazing at their mother's face (5 cases) and/or their father's face (3 cases). Although no significant associations were found with parental communication considering the infant's smiles as target, the infant's smiles significantly elicited the occurrence of maternal Affectionate Talk and paternal Affectionate Touch, both co-occurring with Gazing at infant with expression of Positive Affect.

Comparing mother-infant and father-infant interactions (Aim 2)

Results from sequential analysis revealed similarities, but also differences between mothers' and fathers' behaviors that affected – and were affected by – the infant's engagement (mainly indicated by the infant gaze orientation). In addition to the most complete configuration of Affiliative Behavior, it was particularly maternal Affectionate Touch, but paternal Affectionate Talk to affect the occurrence of infant's Gazing at the parent's face. However, paternal Affectionate Talk disjointed by Affectionate Touch was very short. The durations of the different communicative behaviors addressed by mothers and by fathers to their preterm infants, and the latter's behaviors shown during mother-infant and father-infant interactions were compared through a series of paired t-test. Results (see Tables 3.4 and 3.5) indicate that mothers produced a significantly greater proportion of Affiliative Behaviors than fathers. The effect sizes reveal that mothers also produced more co-occurrence of sensitive behaviors (Gazing at infant with Positive Affect and Affectionate Touch and Talk) than fathers. On the contrary, the latter produced more Affectionate Touch co-occurring with Gazing at infant with Neutral Expression than mothers. The preterm neonates, in turn, showed more alertness with mothers than with

fathers: in particular, they spent a significantly longer time gazing at the environment during mother-infant – than father-infant – interaction, and more time gazing at the mother's face (as the effect size reveals) than at the father's face. On the contrary, the proportion of time spent by the preterm infants with eyes closed was significantly greater with fathers than with mothers

Table 3.4 *Descriptive Data and Statistical Results for Mothers' and Fathers' Communicative Behaviors (180 s)*

	Mothers		Fathers				
Behavioral configuration	*M*	*SD*	*M*	*SD*	*t(df)*	*p*	*d*
8. GazeOn+AffTouch&Talk+PositFace	64.10	33.97	49.00	29.77	1.59(19)	.13	.36
7. GazeOn+AffTouch+PositFace	57.50	40.45	58.90	38.39	-.13(19)	.89	.03
6. GazeOn+AffTalk+PositFace	5.60	8.56	1.90	4.47	1.72(19)	.10	.57
5. GazeOn+AffTouch+NeutrFace	31.95	36.81	50.60	46.47	-2.56(19)	.19	.10
4. GazeOn+PositFace	5.75	9.56	5.85	9.58	-.04(19)	.97	.01
3. GazeOn+NeutrFace	4.80	15.57	3.85	5.52	.32(19)	.75	.07
2. GazeOn+NonAffCarTouch+NeutrFace	7.35	18.86	6.65	13.65	.22(19)	.83	.05
1. GazeOff	3.05	3.93	3.75	4.09	-.50(19)	.62	.11

Table 3.5 *Descriptive Data and Statistical Results for Infants' Behavior with Mothers and Fathers (180 s)*

	with Mothers		with Fathers				
Behavioral configuration	*M*	*SD*	*M*	*SD*	*t(df)*	*p*	*d*
7. GazeOn+Smile	0.40	0.82	0.30	0.80	0.57(19)	.58	.13
6. GazeOn+FaceNeutral	72.00	52.88	54.50	47.01	1.35(19)	.19	.30
5. GazeOnEnvironment	35.90	22.18	19.65	18.68	2.38(19)	.03	.53
4+3. GazeOff+FaceNeutral/HeadAverted	33.44	34.14	39.20	40.56	-0.72(19)	.49	.16
2. EyesClosed	30.25	31.73	65.20	63.81	-2.70(19)	.01	.60
1. NegativeExpression	8.40	23.33	1.45	4.41	1.29(19)	.21	.29

DISCUSSION

The present study contributes to increase our understanding of the very early development of interactive contingencies between mother/father and the preterm infant.

Most studies in the area of the parent–preterm infant interaction have detected that preterm infants tend to spend less time in the alert state, to be more passive during social exchanges, and to send more unclear communicative signs. As a consequence, caregiver–preterm infant interactions are less co-regulated compared to

those between full-term infant and their caregivers (Feldman & Eidelman, 2007; Forcada-Guex, Borghini, Pierrehumbert, Ansermet, & Muller-Nix, 2011; Montirosso, Borgatti, Trojan, Zanini, & Tronick, 2010; Provenzi et al., 2017), and a scant dyadic synchrony endures at 1 year corrected age (Feldman, 2007). Nevertheless, almost all these studies have considered social and interactive behaviors after discharge from the NICU, over the infant's first 2 years (usually at 3 or 6, 12, 18 and/or 24 months of corrected age) (Korja, Latva, & Lehtonen, 2012). Moreover, the few studies (Coppola & Cassibba, 2010; Feldman & Eidelman, 2007; Keren, Feldman, Eidelman, Sirota, & Lester, 2003; Welch et al., 2012) that have focused on parent-infant spontaneous behaviors in NICU have not explored free face-to-face interaction. This can be partly due to the fact that as soon as preterm infants are born, they are usually kept in an incubator, a protected and controlled environment that does not allow the new family to experience the natural physical contact and emotional closeness. But usually once the weight of 1700-1800 grams has been reached (New, Flenady, & Davies, 2008) (though weight varies widely – usually upward – depending on each neonatal unit's clinical guideline), infants are transfer from incubators to open cots. This new condition allows caregivers' easier accessibility to their babies, and then may be crucial to establish a caregiver-infant interactions which play a crucial role in early regulation of the stress response (Meaney & Szyf, 2005; Mendelsohn, 2005; Provenzi et al., 2016) and provide the foundations for the development of mutual regulation – skills which have a long-term impact on the functioning of affective relationships and optimal bio-social outcomes (Aita, Johnston, Goulet, Oberlander, & Snider, 2013; Brummelte et al., 2011; Feldman, 2007; Feldman, Eidelman, Sirota, & Weller, 2002; Flacking et al., 2012; Reynolds et al., 2013; Welch et al., 2014, 2015).

We know from the literature on full-term infants that mutual attentiveness starts from the first 2 weeks and it has a dominant bidirectional link between infant simple (or concentrated) attention and maternal following and/or affectionate talking (Lavelli & Fogel, 2013). Our findings show that parent-preterm infant interactive contingencies are already present at around 35 weeks PMA. In particular, we found that both paternal and maternal affiliative behavior (Feldman & Eidelman, 2007) – including the sum proportions of positive facial affect, gaze at infant face, affectionate touch and talk – elicit infant attention in terms of gazing at parent's face. Furthermore, preterm infants' attention was evoked by paternal behavioral

configuration 6 (Positive Facial Affect + Gaze on + No Touch + Affectionate Talk) and maternal behavioral configuration 7 (Positive Facial Affect + Gaze on + Affectionate Touch + No Talk). This suggests that preterm infant's attention is activated mainly by the fathers' vocalization (present in both the behavioral configurations 8 and 6, which included also the Positive Facial Affect) and the mothers' touch (present in both the behavioral configurations 8 and 7, which included also the Positive Facial Affect). With regards to father-infant interaction, our hypothesis is based on studies of auditory function in preterm infants, which demonstrated that babies between 32 and 35 weeks post conception respond to the male voice, but not to the female voice, with decreased heart rate (Lee & White-Traut, 2014; Taheri, Jahromi, Abbasi, & Hojat, 2017), which is indicative of an orienting attentive response (Barreto, Morris, Philbin, Gray, & Lasky, 2006). Regarding mother-infant interaction, since no differences were found in the overall levels (mean duration) of affectionate touching among mothers and fathers, our hypothesis is that qualitative characteristics of mothers' touch are different from those of the fathers. In this difference lies the mothers' better ability to elicit infants' attention through tactile stimulation. Mothers are more present in the NICU than the fathers (Raiskila et al., 2017), spend much time participating in caregiving activities of their baby (Franck & Spencer, 2003; Raiskila et al., 2016), and present more frequent touching compared with fathers (Harrison & Woods, 1991; New & Benigni, 1987; Stack, 2004). Moreover, when mothers and fathers are both present in the NICU, some of the fathers take a step back in their caregiving involvement, compared with mothers in order to give more space to their partner, as fathers themselves reported in an interview (see Chapter 5). Our hypothesis about fathers' lower ability to provide quality touch to elicit infants' attention through tactile stimulation, a lack linked to limited experience in infant care, is consistent with some studies on touch and massage in early child development that found that full-term infants who receive massage therapy by their fathers greeted them with more eye contact than did the infants who had not been massaged by their fathers (Cullen, Field, Escalona, & Hartshorn, 2000; Scholz & Samuels, 1992). All this suggests the need to identify the types of touch that might elicit and capture infant attention. More research is needed, particularly pertaining to fathers' *vs.* mothers' use and styles of touching during interactions in the NICU.

One important limitation of the study is the sample size of 20 infants and thus 20 mother–infant and 20 father–infant dyads that were observed. Therefore, there might exist additional types of interactive contingencies that we did not see – or that we saw, but none with statistical significance (e.g. infant's social smile) –, because of sampling issues.

CONCLUSION

The present study makes a unique contribution to the literature on the parental engagement and early interactions with preterm infants during the stay in the NICU.

In summary, we found that both maternal touch and paternal vocalization play a central role in evokes infants' attention, and these might represents the earliest pattern of mutual attentiveness between mother/father and preterm infant.

From a clinical perspective, looking at the improvement of (a) the development of parental feelings of being attached to the infant, (b) the developmental pathways of early face-to-face communication, and (c) the outcomes of infants/children born prematurely, our findings suggest that could be crucial to transfer the preterm infant from the incubator to an open cot as soon as they are medically stable (and already at a body weight of 1600 grams; New, Flenady, & Davies, 2011). Furthermore, could be important to realize parent-specific interventions aimed to improves and sustain positive engagement in parents; for example, one of the targets of the intervention for fathers should be to increase the qualitative aspects of touching.

4

FATHERS' EXPERIENCES WITH THEIR PRETERM BABIES ADMITTED TO NICU: A MULTI-METHOD STUDY *

INTRODUCTION

Becoming a parent of a preterm baby hospitalized in a neonatal intensive care unit (NICU) is a distressful and traumatic experience (Carter, Mulder, Frampton, & Darlows, 2007; Davis, Edwards, Mohay, & Wollin, 2003; Lefkowitz, Baxt, & Evans, 2010). Preterm birth and the NICU environment constitute a big obstacle to parental care (Muller-Nix et al. 2004; Zelkowitz, Bardin, & Papageorgiou, 2007) and hence to the development of the bonding process between parent and infant (Feldman, Weller, Sirota, & Eidelman, 2003), both of which may have negative consequences on infant development (Goldberg & Di Vitto, 2002; Jotzo & Poets, 2005; Siegel 1982; Treyvaud et al., 2009, 2010).

Often, given the mothers' need for a period of physical recovery from premature labor and delivery, fathers are on the front line of caring for the infant. Nevertheless, fathers can face many obstacles that can impact on their role as fathers (Fegran, Helseth, & Fagermoen, 2008; Lundqvist, Westas, & Hallström, 2007; Pohlman, 2009; Provenzi et al., 2016), with possible negative consequences for both their ability to take an active part in the care of their baby (Lindberg, Axelsson, & Öhrling, 2007), and the development of a good father-infant relationship (Gutierrez-Galve, Stein, Hanington, Heron, & Ramchandani, 2015; Zelkowitz et al., 2007).

Background

The few studies that have conducted interviews with fathers of premature infants provide a coherent picture. The preterm birth of an infant is a traumatic event for

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the fathers (Tracey, 2000), who experience a sense of lack of control (Arockiasamy, Holsti, & Albersheim, 2008) and hide their emotional difficulties from healthcare providers (Pohlman, 2005, 2009), but report a need to share their experience (Coppola, Cassibba, Bosco, & Papagna, 2013) with someone who can understand (Lindberg et al., 2007). The first moments with the preterm infants evoke a 'rollercoaster of emotions' (Arnold et al., 2013) which can lead fathers to become emotionally, and sometimes physically, distanced from the situation. After the initial shock, research has shown that fathers can experience emotional closeness with their infants during hospitalization in the NICU (Lundqvist et al., 2007).

However, although family-centred care in the NICU has greatly improved in recent decades, the involvement of fathers there is restricted by contextual, individual and cultural barriers (Feeley, Sherrard, Waitzer, & Boisvert, 2013). Moreover, despite the fact that fathers' experiences differ from those of mothers' (Hagen, Iversen, & Svindseth, 2016; Matricardi, Agostino, Fedeli, & Montirosso, 2013), the great majority of qualitative studies in the field of prematurity so far have mainly or exclusively concentrated on the mothers, and typically too few fathers were interviewed (often less than ten participants; Provenzi & Santoro, 2015) for the data to be reliable (Stefana & Lavelli, 2018). To the best of our knowledge, no studies have focused their investigations on the father's role, his emotional experiences and or his reactions to the preterm birth from the very first moments of their child's life to the stabilization of the their medical conditions.

In order to adequately support fathers in their transition to fatherhood and in their involvement in the infant's care from as early as the child's time in the NICU, specific knowledge is required so that improvements to the services of the NICU can be informed (Gooding et al., 2011; Provenzi et al., 2015).

THE STUDY

Aims

The first aim of this study was to explore fathers' experiences with their preterm babies – beginning at the birth and going on through those developed during their stay in the NICU; in this way it is intended to shed light on their emotions, feelings, thoughts, and fantasies. The second aim was to assess whether different profiles (clusters) of the fathers' emotional experiences could be identified from their narratives.

Design

We used a multi-method approach and a mixed-method research design to provide a rich understanding of fathers' experiences and to develop a conceptual framework which could be informative to nursing practice and psychological support. The study included ethnographic observation (Dykes & Flacking, 2015; Hammersley & Atkinson, 2007) in a level III NICU (American Academy of Pediatrics, 2012) for 18 months (from September 2015 to March 2017), semi-structured interviews, self-report questionnaires, and clinical data. The researcher was not associated with the hospital. He was a male PhD student and clinical psychologist trained in infant observation and clinical psychological assessment. The mixed-method design was primarily qualitative with a quantitative component (see Data analysis).

Participants

Participants were recruited from a 20-bed, level III NICU in Verona (Italy). Those eligible to participate in the study were the biological fathers of infant(s) born before 34 weeks of gestation, who were Italian and living with the infant's mother. Fathers who had psychiatric illness, and/or who habitually used or abused drug or substance were excluded from the study. Participants were recruited through purposive sampling until thematic saturation (Guest, Bunce, & Johnson, 2006; Silverman, 2017). Twenty fathers were enrolled in the study. Fathers' and infants' characteristics are presented in Tables 4.1 and 4.2, respectively.

Data collection

Ethnographic observation

First, the researcher undertook a period of participant observation with the fathers in the NICU in order to (a) establish a close working relationship (Horvath, Del Re, Flückiger, & Symonds, 2013), (b) obtain rich qualitative data from direct observations of the father-infant interactions and of their emotional response, and informal talks with them. Fieldnotes were restricted and focused on fathers verbal and non-verbal behaviors and were recorded in writing as soon as possible after the periods of observation. As far as possible, the notes were reported in a manner that approximates word-for-word records and represents non-verbal behaviors in relatively concrete and descriptive terms. All fieldnotes were included in the qualitative analysis.

Table 4.1 *Father Characteristics*

Characteristics	*M* (*SD*)
Age (years)	39.4 (4.7)
First-time parents	14 (70%)*
Socioeconomic status	2.9 (0.6)
Range	1.8–4
CES-D scores	14.9 (7.7)
Length of NICU stay at the time of interview (days)	52.5 (31.7)
Range	9–119

Note. Fathers (n = 20)
* *n* (%)

Table 4.2 *Infant Characteristics*

Characteristics	*n* (%)
Pregnancy	
Singleton	12 (60%)
Twin (couples)	8 (40%)
Type of birth	
Vaginal	1 (4%)
Cesarean	27 (96%)
Infant gender	
Males	12 (42.9%)
Females	16 (57.1%)
	M (*SD*)
Gestation at birth (weeks)	30+2 (3)
Range	23+4–33+5
Birth weight (kg)	1.389 (.455)
Range	.610–2.185
Perinatal risk score (PERI)	8.4 (6.2)
Range	1–21
Presence of major sequelae	17.9% (5)*

Note. Infants (n = 28)
* *n* (%)

Semi-structured interviews

Individual semi-structured interviews (approximately 45 minutes long) were conducted with the fathers and audio-recorded in a private room in the NICU when the infant's medical condition(s) has been stabilized. An interview guide was used to facilitate a discussion about the fathers' experiences of their preterm babies' hospitalization in NICU. The guide consisted of: (a) six open-ended questions on their feelings and thoughts related to becoming fathers, the first time that the father saw and/or touched his baby, the bond with the baby, caregiving activities, feelings towards the baby from the time of preterm birth to their discharge from the NICU, (b) three questions on the NICU experience, and (c) seven questions on the fathers' experiences of their couple relationship during their preterm infant's stay in the NICU (see Appendix). The latter questions will be analyzed separately and will be object of another article.

Self-report questionnaires

All fathers were asked to complete a questionnaire on demographic and socio-economic information (age, marital status, years of formal education, occupation, family composition), and the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) – Italian version (Fava, 1983) to assess symptoms of depression (Myers & Weissman, 1980; Sanavio & Sica, 1999).

The CES-D Scale contains 20 items about depressed affect, positive affect, somatic complaints, and disturbed interpersonal relationship. The answer to each item is on a 4-point Likert scale on which participants indicate the frequency with which they experienced the corresponding symptom during the past week, ranging from 0 (on one day in the last seven) to 3 (on 5-7 days in the last seven). The total score ranges from 0 to 60, with higher score indicating a greater number of symptoms.

Clinical data

The Perinatal Risk Inventory (PERI; Scheiner & Sexton, 1991) was used to evaluate the severity of the infant's perinatal medical problems; the higher the score, the more severe the infant's condition. PERI comprises of 18 parameters such as the APGAR index, gestational age, birth weight, head growth, electroencephalography, cranial computed tomography, and ventilation.

Ethical considerations

All participants provided written informed consent according to the study protocol approved by the Ethical Committee for Clinical Trials of the Verona and Rovigo Provinces (reference no. 569CESC).

Data Analysis

Qualitative analysis

Audio files were transcribed verbatim and all transcripts were verified for accuracy. Then, at the end of each transcript, the interviewer added information obtained through informal talks with fathers held during the participant observation period in NICU. An investigator triangulation approach (Creswell & Miller, 2000; Jick, 1979; Patton, 1999) was used, and thematic content analysis (Boyatzis, 1998; Braun & Clarke, 2006; Roulston, 2001) was applied to the transcripts by two researchers independent of the interviewer. The two researchers independently generated initial codes of interest from the first ten transcripts. All codes were compared and contrasted, and then examined and discussed by the interviewer and the two researchers to identify potential themes. The goodness of the themes was checked in relation to the initial codes. A clear definition and a name for each theme were then generated. Then, the researchers analyzed the data within the defined themes. Data was managed using NVivo 11 (QSR International, USA).

Finally, we checked that the themes emerging from the thematic content analysis of the interviews were consistent with the observations made during the participant observation in NICU.

Quantitative analysis

A cluster analysis was applied to the themes that emerged from the interviews in order to assess whether a range of profiles of fathers' emotional experiences could be identified from the fathers' narratives. The analysis was run several times with records sorted in different random orders to verify the stability of the clusters that were identified. Then, a set of simple categorical regressions with optimal scaling was applied, in order to examine the relationship between the variable of belonging to a given cluster and both infants' characteristics (i.e., birth weight, gestational age, PERI

score, presence of sequelae, days in NICU, singleton *vs.* twins), and fathers' characteristics (i.e., having other children, CES-D score, age, family SES) as possible explanatory variables. All statistical analyses were carried out using SPSS version 22.

Validity and reliability

A triangulation method was used in order both to develop a comprehensive understanding (Patton, 1999) of the fathers' experiences, and to test validity (Carter et al., 2014; Creswell & Miller, 2000; Jick, 1979; Patton, 1999) through the convergence of information from different sources: the fathers' interviews which were coded by independent researchers, and participant observation which was conducted in the NICU by the main investigator. Representative quotes of themes that emerged from the fathers' interviews – reported in Table 4.3 – contribute to a demonstration of the authenticity of the analysis. The inter-coder reliability was calculated on 20% of the interviews: each time the two independent researchers attributed the same code – or did not attributed any code – to the same sentence of the transcript, it was considered agreement; otherwise, it was considered disagreement. The agreement percentage was 90%. Disagreements were addressed through discussion between the interviewer and the two independent coders until consensus was achieved.

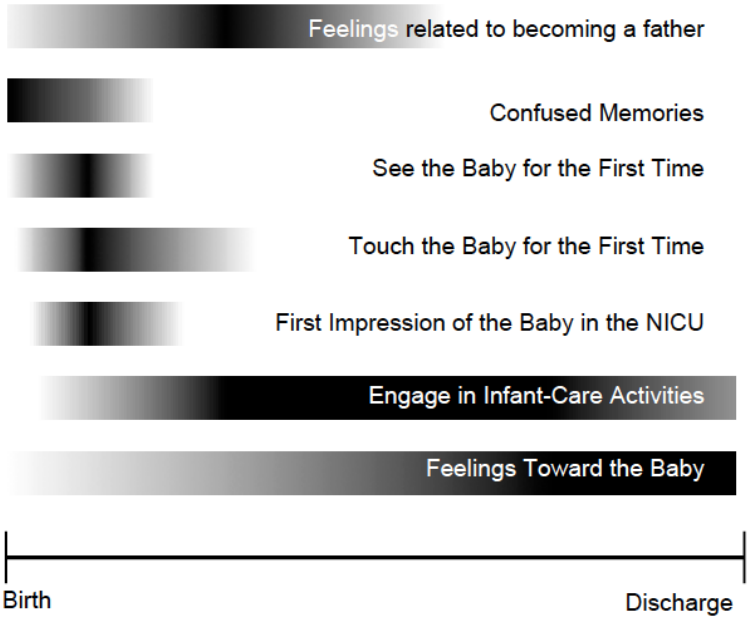
RESULTS

Main themes identified from fathers' interviews (aim 1)

Seven main themes were identified from thematic content analysis of the interview data: Feelings related to becoming a father, Confused memories, Seeing the baby for the first time, Touching the baby for the first time, First impressions of the baby in the NICU, Involvement in infant-care activities, and Development of feelings toward the infant from birth to discharge.

The timeline of the themes (i.e., the period of time to which each theme refers) is depicted in the Figure 4.1. Table 4.3 (see pages 70–73) provides illustrative quotes for each theme that occurred. The quotes in Table 4.3 are referred to by the father's ID number in the text.

Figure 4.1 *Timeline*



Feelings related to becoming a father

When asked about the experience of becoming a father, just under half of participants (45%) focused on the experience of becoming a father per se (i.e., without mentioning the preterm birth), expressing mainly joy, and talking about the realization of a dream, the feeling of becoming a family, but also the arrival of new responsibilities) (ID 9; Table 4.3). The majority (55%) of fathers, on the other hand, included references to their baby's preterm birth and hospitalization or to the anxiety and worries about their baby's medical conditions, and the fear of losing him/her (ID 6; Table 4.3). For these eleven men, becoming a father was not like they had imagined (ID 8; Table 4.3). This second group also included five of the six second-time fathers included in our sample; no one, however, compared this preterm birth with the full-term birth of their first child.

Interestingly, the first group included two of the three fathers who still found it difficult to realize, at the time of the interview, that they had become fathers.

Confused memories

Three fathers (15%) reported a blurred recollection of events immediately after the preterm birth of their baby. All these men had first seen their baby not immediately upon birth, outside the delivery room, but only later, in the NICU (ID 20; Table 4.3).

From fathers' narratives about their first moments with the preterm baby, three themes emerged:

Seeing the baby for the first time

Nine fathers (45%) saw their baby out of the delivery room as they were being moved to the NICU, while the remaining (55%) saw their baby for the first time when she/he was already in the NICU.

The majority of fathers (80%) reported contrasting feelings at the sight of their baby: they felt both happiness/joy that the baby was born and was alive, and fear for the possible onset of complications associated with the preterm birth (ID 10; Table 4.3). Two fathers (10%) reported only negative feelings such as fear and anger at seeing their baby for the first time (ID 20; Table 4.3). All these feelings were regardless of the severity of the situation, and despite of the reassurances given by doctors (ID 16; Table 4.3). Lastly, two other fathers (10%) reported only positive feelings and a sense of relief. It is interesting to note that they are also the only ones who referred to having immediately noticed a resemblance between their baby and a loved one: the partner in one case, the firstborn daughter in the other (ID 9; Table 4.3).

Touching the baby for the first time

Thirteen fathers (65%) reported that they had touched their baby as soon as they were given the opportunity: two of them just outside the delivery room (medical staff had halted the transport of the incubator toward the NICU for a few seconds) and eleven in the NICU. However, two of these fathers felt that they were pressured into touching the baby by medical or nursing staff (ID 7; Table 4.3). These two fathers talked, as others did, about the fear that simply touching the baby might cause rupture/damage/physical pain. This first physical contact evoked in eleven fathers a variety of contrasting feelings narrated as an emotional storm that was hard to describe (ID 5; Table 4.3)

Seven fathers (35%) preferred not to touch their baby the first time they were able to do so. They reported feeling nervous and undecided about what to do when given the opportunity. These fathers described a conflict between wanting to touch their baby and the belief/fear that touching him/her too early might give the baby a

harmful infection (ID 2; Table 4.3), or break/damage/cause him/her physical pain (ID 18; Table 4.3), despite of the reassurances given by doctors and nurses (ID 17; Table 4.3). Altogether more than half the fathers (60%) reported that they feared harming their infant by touching him/her.

First impressions of the baby in the NICU

When fathers talked about seeing their baby in the incubator, in the NICU, three of them (15%) said they were struck by their baby's physical appearance: one saw a little body who was nearly dying (ID 12; Table 4.3), the other two emphasized how small their baby was: an anxiety-inducing condition (ID 4; Table 4.3). Six fathers (30%) were struck by the technology/equipment "covering" their baby in the incubator: these fathers reported that they understood that the technological equipment was necessary for their infant's care but they also felt it caused them great anxiety and stress (ID 5; Table 4.3). Half of fathers interviewed (IDs 6, 10, and 14; Table 4.3) mentioned both the baby's physical appearance and the technological equipment. Only one father (5%) did not mention either of these aspects.

Involvement in infant-care activities

The majority of fathers (85%) expressed the wish to participate in the daily care of their baby and referred to being involved in infant-care activities (i.e., change diapers, bottle-feeding). Some of these fathers also reported taking a step back in their caregiving involvement as their baby's conditions improved and/or when s/he was discharged from hospital, in order to give more space to their partners.

During caregiving activities most of this majority of fathers experienced a combination of positive and negative feelings (respectively mostly joy and happiness, and fear) (ID 13; Table 4.3), whereas six of them expressed only positive feelings such as joy, happiness, calm, and satisfaction (ID 1; Table 4.3); no one father involved in the infant's care experienced exclusively negative feelings. Of the remaining participants, one father (5%) said that although he wished to be engaged in infant-care activities, his work duties prevented him spending much time in the NICU. On the occasions when he was able to, he experienced both the joy of finally being there with his baby and the fear of 'breaking' him (ID 15; Table 4.3). The other

two fathers (10%) were reluctant to be involved with their infant, so they chose not to participate in any caregiving activities (ID 20; Table 4.3).

Development of feelings toward the infant

Almost all the fathers (85%) reported that their positive feelings in general, and in particular their love for their baby, had gradually increased from the moment of birth to the time of the interview. It is interesting to observe that fourteen of them identified one or more turning points – probably closely connected – that decisively accelerated this increase. Those turning points were the chance of having the baby out of the incubator, the opportunity to touch and interact with the baby for a longer time and an improvement in the baby's medical conditions (ID 5; Table 4.3).

Three fathers (15%) reported that their feelings of bond and love toward their baby had remained more stable over the period. Nonetheless, two of these fathers did also refer to the impact of the turning points mentioned above (ID 4; Table 4.3).

Clusters of fathers' emotional experiences (aim 2)

Cluster analysis applied to themes that emerged from the interviews identified two clusters of fathers based on their emotional experiences, that we labeled 'fathers of preterm infants' (12 fathers) and 'preterm fathers' (8 fathers). Clusters were distinguished by the following predictors (in order of importance): (1) when fathers touched the preterm infant for the first time (1.00), (2) the inner experience of becoming a father (0.65), (3) fathers' involvement in the infant's care (0.39), (4) fear of 'breaking' the infant (0.33), (5) fear of the infant's death (0.28), (6) emotions on first seeing the infant (0.27), and (7) impressions related to the infant in the incubator (0.22).

The 'fathers of preterm infants' touched their baby as soon as they were given the opportunity, without feeling afraid that touching would harm him/her. They were struck by their baby's physical appearance but did not say they were worried about losing their baby. Indeed, these fathers did not refer to their baby's preterm birth and hospitalization even when they talked about their personal experience of becoming a father. All these fathers were involved in infant-care activities during the NICU stay.

In contrast, the 'preterm fathers' preferred not to touch their preterm baby when they first had the opportunity of doing so, and express their fear of breaking/ damaging/ infecting her/him. They were struck both by the baby's physical appearance and by the technological equipment around her/him, and were afraid that s/he would die. When talking about the experience of becoming a father, they reported anxiety and worries about the preterm birth and their baby's medical conditions. Only 63% of these fathers were involved in their infant's care.

Then, a set of simple categorical regressions with optimal scaling was applied in order to examine the relationship between belonging to cluster 1 ('fathers of preterm infants') *vs* belonging to cluster 2 ('preterm fathers') as response variable, and both infants' and fathers' characteristics as possible explanatory variables. The results showed that belonging to a given cluster of fathers' emotional experiences was significantly associated with the infant's Gestational Age (M = 32.5 weeks for cluster 1 *vs* M = 29.1 weeks for cluster 2; $\beta = 0.461$, $F(1) = 5.60$, $p = 0.029$).

DISCUSSION

This is one of the few studies that explores and examines the experience of fathers of preterm infants from birth to a few days before NICU discharge.

The findings show that the majority of fathers are ready to be involved in the infant's care soon after the preterm birth (Fegran et al., 2008; Lindberg et al., 2007), although for several of them the experience of the preterm birth and subsequent admission of their son/daughter to the NICU adversely affected the emotional experience of becoming a father. The combination of these two experiences deprived these fathers of a mental space free from trauma of preterm birth (Jotzo & Poets, 2005; Tracey, 2000). Here it is interesting to note that for fathers belonging to our 'preterm fathers' cluster (infants' mean GA: 29.1 weeks), the premature birth occurred in a crucial period – between the 24th and 32nd week of gestation – by which time men have usually elaborated neither a representation of their self as a father nor of their baby (Ammaniti, Tambelli, & Odorisio, 2014).

Inconsistently with other studies (Ayers, 2007; Arnold et al., 2013, Golish & Powell, 2003) studies, however, that focused primarily or exclusively on mothers, only a few fathers in our sample showed difficulty remembering the events and feelings that occurred immediately after the preterm birth of their baby. All three

fathers who reported memory disturbance – presumably due to a post-traumatic stress response (Brewin, 2011; Guez et al., 2011, 2013) – had to wait some hours before seeing their baby after the birth. This allows us to hypothesize that the fathers' emotional distress was exacerbated by the delay in their first contact with the babies. This suggests another angle on the debate on the usefulness or otherwise of permitting fathers to attend preterm childbirth (Koppel & Kaiser, 2001), not currently allowed in Italian hospitals.

With regard to fathers' chaotic feelings on seeing their baby for the first time, our findings are consistent with previous studies (Arolds et al., 2013; Hagen et al., 2016; Hugill, Letherby, Reid, & Lavender, 2013; Stacey, Osborn, & Salkovskis, 2015). Similarly, fathers' concerns about infecting or hurting their baby by touching her/him are in line with previous studies, but inconsistent with evidence on the benefits from tactile experience during NICU stay (i.e., Kangaroo care can reduce morbidity and mortality in preterm infants; Jefferies, 2012). It is interesting to note that such concerns were resistant to the reassurances given by NICU staff.

One finding that is inconsistent with previous studies (Feeley et al., 2012; Lee, Lin, Huang, Hsu, & Bartlett, 2009) is that the infant's physical attributes do not seem to have an influence on touching (*vs.* non-touching) the infant, nor on fathers' involvement in the infant's care. What does seem to affect fathers is the infants' gestational age (29.1 weeks for the 'preterm fathers' cluster *vs.* 32.5 weeks for the 'fathers of preterm infants' cluster). About a third of our participants (mostly belonging to the 'preterm fathers' cluster) presented thoughts of potentially hurting, infecting, and/or causing pain to their preterm baby by simply touching her/him. These fathers reported that these worries led them to postpone the first physical contact with their baby, but that this postponement did not influence their subsequent involvement in infant-care activities (at least for most of them). It is worth highlighting here the difference between emotional involvement and physical involvement of fathers in their infant's care. Both emotional involvement and physical involvement entail an activation on the part of the fathers, but while physical involvement is usually instantly accomplished, emotional involvement grows as the baby – due to neurodevelopment and the improvement of general health – becomes capable of interacting with caregivers. Indeed, feedback from the infant plays a major

role in reducing anxieties/fears and activating a positive paternal emotional involvement (Feeley et al., 2012; Lundqvist et al., 2007). In some cases the father's immediate involvement – meaning his 'doing things' – could be interpreted as a defense against anxiety/fear for the possibility of infant's death or disabilities, and against feelings of frustration and guilt. Similarly, the fathers' decision to take a step back from direct involvement in their infant's care to a more 'observing' position – explained by some fathers by the wish to leave more space to the mother – could be interpreted as a defense that allows the father to be close to the mother and the infant without assuming responsibility for the infant's care.

On the whole, fathers' emotional involvement appeared to be unready to bloom until the baby's medical conditions had significantly improved and the infant – due to the maturation of the neural system – had developed the ability to give positive feedback during interaction with the caregiver. Therefore, it can be hypothesized that fathers of preterm infants are able finally to become fully aware of the tenderness of their feelings only after the weakening of their defenses, which seem to happen only after an improvement in their baby's health status.

Advantages and Limitations

Our study has some advantages, the first of which is the use of a multi-method approach and mixed-method analyses. The second is the use of a male interviewer (Arockiasamy et al., 2008) not associated with the hospital (Sawyer et al., 2013). The third is the larger sample size than other studies based on in-depth interviews. A fourth advantage is that is offers substantial implications for health services and health policies.

There are also three clear limitations. The first is that, in NICU, since that note-taking in the course of participation would be disruptive and result in limited fathers' natural participation, fieldnotes are write up as soon as possible after the periods of observation creating the risk of a rapid forget or confuse whole episodes, and more generally, a decrease in the quality of the notes. The second is that, although various strategies were applied in order to guarantee the reliability and validity of the data, there were no discussions with the individual participants of the transcriptions of the interviews or the data obtained from the questionnaires and observation sessions.

This means that there might well be alternative, undocumented, explanations of the results. The third is that the results may not be generalizable to fathers from other cultures or to fathers living in countries with different hospital regulations and/or guidelines for preterm infant care.

CONCLUSION

The present study makes an original contribution to the scant literature on fathers' emotional experiences from the moments after their infant's preterm birth to when the baby's medical condition stabilized. Our findings suggest that fathers of preterm infants would benefit from specifically personalized and directed support, based on the degree of preterm (before vs. after 32 weeks of gestation). The results also suggest that these fathers, regardless of the infant's gestational age, could benefit from (a) the choice of attending the preterm birth, (b) the opportunity to interact with their baby soon after birth, and (c) the establishment of nursing guidelines and standards of care aimed at facilitating and supporting paternal involvement in the infant's care. Finally, the study highlights the need for regular, direct observation of fathers' behavior in NICU and their interactions with their hospitalized babies as a routine assessment tool for understanding the fathers' emotional states, the degree of their ability to take an active part in the care of their baby, and the developmental trajectories of the father-infant relationship along the course of the NICU journey.

Table 4.3 *Themes, quotes, and number of interviews in which themes were mentioned*

THEME	ILLUSTRATIVE QUOTES
Become a father	
	"[Child's name]'s birth is surely an important step in life, a change and a…becoming a father, building something with Y and therefore building a family. We got to – and I feel that we did at the right moment – this point of maturity" (ID 9).
	"I was already used to being a father as I already had a daughter, but in this case it was a trauma, I mean, I've always been pretty lucky in life, and I have to say that this one was the most critical moment I had so far…we didn't even know if the baby was going to survive or not" (ID 6).
	"It wasn't like what I had imagined, in the sense that, well, I was away and I had to get back quickly, my wife was hospitalized, and then well… I dealt with it in a rational way, but from an emotional point of view it was a big blow, in the sense that, well, they were born before term, with a c-section, I wanted to go inside and be present and they didn't let me in [...] it took me a while to process that they were indeed my children, that they were born" (ID 8).
Confused memories	
	"I have mild memories. I clearly remember the evening, but I feel as though everything is in a bubble, a bit blurry, overwhelmed by the whole situation" (ID 20).
First moments between father and baby	
See the baby for the first time	"What stuck to me the most was the way out of the operating theater where I actually saw them already in the incubator… it was a very strong impact. It was very, very… it's also hard to describe it as an emotion since I wasn't even able to speak, it was a mix of emotions, joy, anxiety, concern, there were a lot of emotions intertwined, I can hardly express what I felt, also because like I said I knew that being born before the due date some complications could arise, so then there was joy but at the same time there was strong concern" (ID 10).
	"The first thing I thought of was that I was going to set the world alight, because I was angry right after I saw her, I was quite angry with the situation itself. I know everyone probably says it, but the first thing that you think of is "but why us? Why [child's name]?" and so the first feeling was right on anger after I saw her, I got into full protection mode, to the extent that if I had to kill someone to save [child's name] I would have done it without thinking twice. It was a feeling of anger mixed with protection, there. I couldn't do anything, I felt so powerless in the sense that she was there attached and she had to do everything" (ID 20).
	"It was a mix of emotions because surely there was happiness to have them and see them, but also concern and fear because well… the sight of all those tubes prevailed, all those monitors, and well, although the doctors reassured us by saying that they were okay, things were going well, I was always alert" (ID 16).
	"The first time was when she was just born, right after she got out

	of the doors of the operation room, you could only see the little head and there, the first impression was that of saying 'yup, that's my daughter, that's [partner's name]'s daughter' because for example, briefly under a ray of light, she contorted her face and you could see two little expression wrinkles like [partner's name]'s, so…that was the exact thought, yeah, yes, it's her…it was such a strong [positive] feeling" (ID 9).
Touch the baby for the first time	"I was a bit shook because everything happened suddenly, they (the nurses) forced me a little to touch her […] I wasn't ready to…I thought that she couldn't even be touched… I thought that she was fragile" (ID 7).
	"It was a mix of fear, positive emotions, negative feeling, a storm of emotions that's difficult to explain" (ID 5).
	"3 or 4 days passed (before I touched her) because I was afraid that she would get infected by something. And since they had told me, among the other things 'yeah, but here it's easy to catch an infection', then in doubt I always told myself 'well no, I'd rather not touch her'… I touched her if I'm not mistaken the third, fourth day after her birth" (ID 2).
	"You really want to touch him all over but you're scared to because he's made of glass, you're scared to break him" (ID 18).
	"The first impact is never the most pleasant even if there's always the urgency to see and touch him, although I had already been reassured on the fact that he was okay" (ID 17).
First impressions of the baby in the NICU	"In [child's name]'s case, the thing that remained was unfortunately fear, I mean you'd see him and say 'he's gonna die, and so it was a little… this thing was predominant over joy" (ID 12).
	"She's very small, very very small, tiny […] We saw her small small, still needing to completely form in the face because well, she was very small. The impression was that of fragility, extreme fragility" (ID 4).
	"Seeing them there, in those sort of space shuttles with screens, in a plexiglass sarcophagus with wires coming out had a pretty strong impact. I think I reacted pretty well, I understood that it was for their own good, that it was going to last the shortest time possible and that's how I dealt with it" (ID 5).
	"I had pretty well in mind the size of a normal baby, and seeing a baby of twenty-five (once)… not even a kilo, even if all finished and all that, but… after that, also the fact that she is tubed up has quite a bit of an effect on you, full of… strings let's say… but what really makes you feel most sorry is the fact that she was so tiny of course… until you see her you don't think she'd be that small" (ID 6).
	"The way my babies look strikes you…let's say that you enter a

	different dimension from what could be the normal full term birth of a baby, you enter for a while in this peculiar dimension, but mostly what struck me was the intensive care and seeing my baby attached to the machines, that's an image that I'll always carry with me" (ID 10). "As soon as he goes in intensive care the way the baby looks, being born under 700 grams, is very important, immediately after that I also noticed the monitor, all the data, these things that during the first days are very terrible in every possible way, they completely destabilize you until you start to understand a little bit and you start to live with it" (ID 14).
Engage in infant-care activities	"You have this 'thing' of one and a half kilos and you are afraid of breaking it, but the moment is almost beautiful, because it's an intimate moment between, in this case, father and baby, and therefore it's a moment that... I'm not gonna lie, even when they have to change him, I say, 'well, I'll do it'" (ID 13). "I was fine, I mean, I was taking care of my baby, I was giving him what he needed, and this gave me happiness, calm, satisfaction is the word, this gave me satisfaction" (ID 1). "A couple of times, I was the one that got to dress him, and I thought 'this time, I'm also here in these moments, I'm finally with my baby', and you feel as though you're scared of breaking him and think 'look how small he is'" (ID 15). "During this period I was taking care of my family, keeping it all together… More than active with [child's name], I felt active for the family unit. I entrusted my wife with X, she did her care" (ID 20).
Feelings toward the child	"The feelings towards my babies grew stronger in both quality and intensity especially after I was able to start to interact with them. Before, there was the incubator that was a bit of an obstacle, seeing them through the glass, putting my hands inside the windows and not being able to touch them freely. But since they moved to the crib, and I could touch them, pick them up, feel them on me, my feelings have grown exponentially, it's like an explosion of joy and other emotions. First the incubator acted as a brake, but now the quality and intensity of these moments grow every day, I can't wait to hold them" (ID 5). "Starting from her first day of life I thought that I was always going to love her. Now I feel like I have more of an opportunity to demonstrate it to her, I mean, by touching her, kissing her, everything is concrete, but… hasn't changed at all" (ID 24).

5

FATHERS' EXPERIENCES OF SUPPORTING THEIR PARTNERS DURING THEIR PRETERM INFANT'S STAY IN THE NICU: A MULTI-METHOD STUDY [*]

INTRODUCTION

The preterm birth and subsequent admission of a child to the neonatal intensive care unit (NICU) is a critical event for both mothers and fathers (Busse, Stromgren, Thorngate, & Thomas, 2013; Whittingham, Boyd, Sanders, & Colditz, 2014), even in the absence of medical risk and injuries for the infant. Indeed, several studies have shown that parents of these infants experience high levels of psychological distress, with elevated fatigue, sleep disruption and reduced general wellbeing (Dudek-Shriber, 2004; Holditch-Davis et al., 2015; Lee, Lee, Rankin, Weiss, & Alkon, 2007; Lee & Kimble, 2009; Miles, Holditch-Davis, Schwartz, & Scher 2007; Paulson & Bazemore, 2010; Trombini, Surcinelli, Piccioni, Alessandroni, & Faldella, 2008). Parental distress – during the prenatal and postpartum periods mothers' and fathers' emotional states have been found to be significantly correlated (Paulson & Bazemore, 2010) – affects self-efficacy (Dazzi & Zavattini, 2011; Di Blasio, Caravita, Camisasca, & Milani, 2011), which influences the quality of both parent-infant interaction (Feldman & Eidelman, 2007; Forcada-Guex, Borghini, Pierrehumbert, Ansermet, & Muller-Nix, 2011; Montirosso, Borgatti, Trojan, Zanini, & Tronick, 2010; Zelkowitz, Bardin, & Papageorgiou, 2007) and parent-infant attachment (Baldoni et al., 2009; Kaaresen, Ronning, Ulvund, & Dahl, 2006; Korja, Latva, & Lehtonen, 2012; Sullivan, 1999), and can harm the early neurobehavioural and socioemotional development of the infant (Treyvaud, 2014; Treyvaud et al., 2010, 2009).

Background

Over recent decades, neonatal health care systems have promoted the wellbeing of the whole family in a family-centered approach to NICU care (Jiang, Warre, Qiu,

[*] This paper will be submit to *Journal of Advanced Nursing*.

O'Brien, & Lee, 2014). Among the benefits of this approach – which aims to involve parents in all aspects of their infant's daily care – are a reduction in the infant's stay in the NICU (Jotzo & Poets, 2005; Melnyk et al., 2006), and improvements in both the infant's neurobehavioral profile (Montirosso et al., 2012) and the parents' mental health outcomes (Melnyk et al., 2006).

Although fathers' and mothers' experiences differ substantially (Fegran, Helseth, & Fagermoen, 2008; Jackson, Ternestedt, & Schollin, 2003; Matricardi, Agostino, Fedeli, & Montirosso, 2013; Obeidat, Bond, & Callister, 2009), most research projects and current support programs in the area of infant prematurity focus mainly on infants and mothers. The few studies which have also focused on fathers have recognized their experience in the NICU (Provenzi & Santoro, 2015), and the crucial role they play in the infant's psychological development (Huhtala et al., 2014, 2011; Levy-Shiff, Hoffman, Mogilner, Levinger, & Mogilner, 1990; Yogman, Kindlon, & Earls, 1995). Even fewer studies have evaluated – and to our knowledge no studies have specifically focused on – fathers' experiences of supporting and caring for their partner, and/or fathers' perceptions of the quality of the couple's relationship during their preterm infant's stay in the NICU. Some of these few studies have found that mothers get most of their psychological support from their partner (Hagen, Iversen, & Svindseth, 2016; Hughes, McCollum, Sheftel, & Sanchez, 1994; Sawyer et al., 2013; Stacey, Osborn, & Salkovskis, 2015).

THE STUDY

Aims

The present study aims to explore (a) how the fathers view and experience their role as a supporter for their partner, especially during their newborn's stay in the NICU, (b) how they experience their relationship with their partner during her stay in the NICU, and (c) any possible association between the themes that emerge from the fathers' reports and the infants' and parents' characteristics.

Design

This study used a multi-method approach and a mixed-method research design to provide a rich understanding of fathers' experiences during their preterm infants' hospitalization in the NICU and to develop a conceptual framework which could

have clinical implications for healthcare professionals and services. The study included ethnographic work (Dykes & Flacking, 2015; Reeves, Kuper & Hodges, 2008) in a level III NICU (American Academy of Pediatrics, 2012) for 18 months (from September 2015 to March 2017), semi-structured interviews, and self-report questionnaires, and clinical data. The researcher, male, was not associated with the hospital. He was a clinical psychologist PhD Student trained in infant observation and clinical psychological assessment. The mixed-method design was primarily qualitative with a quantitative component (see Data analysis).

Participants

Participants were twenty Italian fathers of preterm infants born and hospitalized at the level III NICU of the Borgo Roma Hospital in Verona, northern Italy. The participants were enrolled through purposive sampling until data saturation (Guest, Bunce & Johnson, 2006; Silverman, 2017) – i.e., when no new themes were identified by the researchers. The criteria for inclusion were: (1) being the father of (a) preterm infant(s) born before 34 weeks PMA (Forcada-Guex et al., 2011; Harel, Gordon, Geva & Feldman, 2011; Welch et al., 2012), (2) being Italian, (3) living together with the mother of his son/daughter. The criteria for exclusion were: (1) psychiatric illness, (2) issues with drug or substance abuse, (3) a partner with psychiatric illness, (4) a partner's issues with drug or substance abuse, and (5) being an adoptive parent. Written informed consent was signed by each participant according to the protocol approved by the Ethical Committee for Clinical Trials of the Verona and Rovigo Provinces.

Data Collection

This study used a multi-method approach including ethnographic work (Reeves, Kuper, & Hodges, 2008) in the NICU (Dykes & Flacking, 2015), semi-structured interviews, and self-report questionnaires. The researcher, male, was not associated with the hospital. He was a clinical psychologist PhD Student trained in infant observation and clinical psychological assessment.

Ethnographic observation

First, the researcher conducted participant observation with the parents in the NICU in order (1) to establish a working relationship (Horvath, Del Re, Flückiger, &

Symonds, 2011), and (2) to obtain rich qualitative data through informal talks and from observations of the fathers in social interactions and emotional experiences in the NICU. Fieldnotes were restricted and focused on fathers verbal and non-verbal behaviors and were recorded in writing as soon as possible after the periods of observation. As far as possible, the notes were reported in a manner that approximates word-for-word records and represents non-verbal behaviors in relatively concrete and descriptive terms. All fieldnotes were included in the qualitative analysis.

Semi-structured interviews

Second, semi-structured interviews were conducted in a private hospital room, while the baby's condition was being stabilized. The individual face-to-face interviews, with no other persons present, were audio recorded and lasted approximately 45 minutes. The interview schedule consisted of 7 open-ended questions and 3 background questions on their NICU experience (see Appendix), a flexible framework for the exploration of the fathers' experience. Six other questions about the fathers' experiences with their neonate(s) will be reported in a separate peer-reviewed paper.

Self-report questionnaires

Thirdly, all parents completed the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977) – Italian version (Fava, 1983) to assess, roughly, symptoms of depression (Myers & Weissman, 1980), and the Dyadic Adjustment Scale (DAS; Spanier, 1976) – Italian version (Gentili, Contreras, Cassaniti & D'Artista, 2002) to assess distress within the couple's relationship (Busby, Christensen, Crane & Larson, 1995). All the parents completed a questionnaire on demographic and socio-economic information. The Perinatal Risk Inventory (PERI; Scheiner & Sexton, 1991) was used to describe the severity of the infants' perinatal problems. Table 5.1 presents the parents' characteristics and Table 4.2 (see page 58) presents the infants' neonatal characteristics.

The CES-D Scale contains 20 items about depressed affect, positive affect, somatic complaints, and disturbed interpersonal relationship. The answer to each item is on a 4-point Likert scale on which participants indicate the frequency with which they experienced the corresponding symptom during the past week, ranging from 0

(on one day in the last seven) to 3 (on 5-7 days in the last seven). The total score ranges from 0 to 60, with higher score indicating a greater number of symptoms.

The DAS contains 32 items about dyadic consensus, dyadic satisfaction, dyadic cohesion, and affectional expression. The answer to each item is either Likert-type (30 items ranging from 0 to 5) or Dichotomous (two items: Yes/No). The total score ranges from 0 to 151, with higher score indicating a better couple satisfaction.

Table 5.1 *Parent Characteristics*

	M (*SD*)
Age (years)	
Paternal	39.4 (4.7)
Maternal	37.2 (4.5)
Marital status	
Married	55% (11)*
De facto	45% (9)*
Living together (years)	7.6 (4.4)
Range	1–21
First-time parents	70% (14)*
Socioeconomic status	2.9 (0.6)
Range	1.8–4
CES-D scores	
Paternal	14.9 (7.7)
Maternal	19.2 (10.3)
DAS scores	
Paternal	117 (7.6)
Maternal	118 (6.2)
Length of NICU stay at the time of interview (days)	52.5 (31.7)
Range	9–119

Note. Fathers (n = 20), Mothers (n= 20).
** % (n)*

Clinical data

The Perinatal Risk Inventory (PERI; Scheiner & Sexton, 1991) was used to evaluate the severity of the infant's perinatal medical problems; the higher the score, the more severe the infant's condition. PERI comprises of 18 parameters such as the APGAR index, gestational age, birth weight, head growth, electroencephalography, cranial computed tomography, and ventilation.

Ethical considerations

Ethical approval was granted by the Ethical Committee for Clinical Trials of the Verona and Rovigo Provinces (reference no. 569CESC). All participants gave written informed consent.

Data Analysis

Qualitative analysis

Each interview was transcribed verbatim and all potential identifiers of person or place were anonymised. The interviewer verified all transcripts by listening to the audio-recording and checking the accuracy of the written transcript. At the end of each transcript, the interviewer added information obtained through informal talks with the fathers during the participant observations. Because the aim of this study was to understand the lived experiences of the participants interviewed and how each of them made sense of those experiences, an Interpretative Phenomenological Analysis (IPA) was used (Smith, Flowers & Larkin, 2009). The IPA is a widely used qualitative research approach frequently applied by clinical, medical and health psychology studies (Brocki & Wearden, 2006; Lafarge, Mitchell & Fox, 2013; Smith, 2011). Previous studies applied this approach to analyze the impact of maternal postnatal depression on men and their role as fathers (Beestin, Hugh-Jones, & Gough, 2014), the experiences of spouses who were caring for their partners (O'Shaughnessy, Lee & Lintern, 2010) and the experiences of parents who were caring for their hospitalized child (Morley, Holman, & Murray, 2017; Oxley, 2015), suggesting its usefulness in this field. After having transcribed the interviews, two independent researchers made notes about their observations and reflections about each transcript. Notes were transformed into emergent themes. The emergent themes were listed and when the researcher had established the connections between

them, the themes were gathered into clusters. A table of the coherently ordered themes from the first participant was produced and used to help orient the subsequent analysis. Each researcher independently repeated the same process for each transcript. Themes were checked in relation to the entire data set. Major themes and subthemes identified by each researcher were compared and contrasted, and then examined and discussed to identify meaningful themes and to construct a table of superordinate themes. Group analysis and discussion with the involvement of a supervisor took place once every five interviews in order to discuss themes emerging, solve discrepancies and check for data saturation.

Quantitative analysis

A correlation analysis between themes (categorical variables) from the fathers' interviews was performed. A set of linear regression analyses was applied to each theme identified and potentially explanatory variables: infants' categorical (i.e., presence of sequelae, singleton vs twins) and continuous variables (i.e., PERI score), NICU-related situational continuous variables (i.e., length of stay at the time of interview), and parents' categorical (i.e., having other children, DAS score, CES-D score) and continuous variables (i.e., age, family SES, years of living together) in order to assess possible concurrent associations between theme frequencies and variables. In addition, a correlation analysis between infants' and parents' variables was performed. Only statistically significant findings will be reported in the Results section.

Validity and reliability

A triangulation method was used in order both to develop a comprehensive understanding (Patton, 1999) of the fathers' experiences, and to test validity (Carter et al., 2014; Creswell & Miller, 2000; Jick, 1979; Patton, 1999) through the convergence of information from different sources: the interviews given by the fathers, and participant observation which was conducted in the NICU by the main researcher. In IPA, the aim is to develop an understanding of the participant's perspective of a particular phenomenon, however, the role that the researcher's experiences and beliefs have upon interpretation is acknowledged (Smith, Flowers, & Larkin, 2009). Therefore, care was taken to acknowledge the researcher's experiences

and beliefs that might influence their conduct in the interviews and their interpretation of father experiences. With regard to the analysis of the interviews, data was managed using NVivo 11 (QSR International, USA). The inter-rater reliability was calculated on 20% of the interviews: the agreement was 85%.

RESULTS

Four main themes were identified. Table 5.2 (see pages 87–90) provides illustrative quotes for each theme that occurred. Quotes in Table 5.2 are referred to by the father's number in the text.

Support for mother

All fathers mentioned having given support to their partner regardless of their worries about the infant's medical status. From the fathers' talks about their support for their partners, four subthemes emerged:

Putting infant's and mother's needs first

Seventeen fathers (85%) said they had neglected or put aside their own needs – for support, for relaxation – in order to take care of their partner and the infant (ID 5; Table 5.2). If the mother's postpartum complications were present (five cases), fathers divided their worries and attentions almost equally between partner and infant. These five fathers spoke about the fear of losing both partner and infant(s), and said they have been going back and forth between them in the first hours and days after birth (ID 16; Table 5.2). If there were no postpartum complications, and the delivery had been by caesarean section, fathers were more engaged with the infant during the normal period of the mothers' bed rest (ID 11; Table 5.2). Four of these seventeen fathers had revealed to their partner their own needs and worries while the neonate was still in the NICU, but then the infant's medical condition improved and permission to bring him/her home – there being no sequelae (medical complications) – was obtained (ID 7; Table 5.2). The other fathers had postponed this revelation to a later stage, after the baby's discharge from the NICU (ID 20; Table 5.2). Only three fathers (15%) said they put their own needs at the same level as their partner's (ID 3; Table 5.2).

Linear regressions revealed a significant positive relationship between fathers' attitude to putting infant's and mother's needs first and PERI score (β=0.003, $p<0.01$), and a significant negative relationship with both the amount of days spent in the NICU (β=0.018, $p<0.05$), and fathers' CES-D score (β=0.005, $p<0.01$).

Suppression or hiding of worries, negative emotions and needs

This theme was significantly correlated with that of putting infant's and mother's needs first (r=0.793).

Eighteen fathers (90%) said that from the birth-date, in order to support their partner, they had omitted mentioning – and sometimes lied about – both their own worries and fears about the infant's health, and their own needs (ID 20; Table 5.2). However, for some of these men their emotional experience was so intense as to cause subsidence. Indeed, four fathers said they had broken down and cried in front of their partners during the recovery period. Two of them felt guilty because they thought that this could be a burden on the partner (ID 5; Table 5.2). Only two fathers (10%) reported having shared their negative feelings with their partner right from the beginning (ID 17; Table 5.2).

We found a significant positive relationship between fathers' hiding of worries and negative emotions and both PERI score (β=0.002, $p<0.01$) and years of living together with partner (β=0.034, $p<0.05$). This fathers' behavior was also found to be negatively associated with the presence of sequelae (β=0.035, $p<0.05$), number of days spent in the NICU (β=0.018, $p<0.05$), and fathers' CES-D score (β=0.005, $p<0.01$).

Counteracting the sense of guilt

Seven fathers (35%) reported that their partner felt they were responsible or had failed, and that they had tried to argue that there was no fault involved (ID 8; Table 5.2). However, two of these fathers shared their partners' sense of responsibility and/or failure: in one case, this was related to the feeling they had transmitted a genetic defect; in the other case, it was related to feeling that the mother had not rested enough during pregnancy. In both cases, the sense of responsibility was believed to be irrational by the fathers (ID 15; Table 5.2).

A positive correlation was found between the mothers' sense of guilt and their fear of rejecting the infant (r=0.545), consistently with the fathers' statements.

Fear that mother will reject the child

Five fathers (25%) said that initially their partners expressed the fear of not being able to look at the baby, or of not recognizing him/her as her own child. The fathers' common response was twofold: fear and asking themselves what they could do if she did disown the baby. In two cases, the fear vanished as soon as the mother saw the baby (ID 13; Table 5.2). In three cases in which the mother had refused, initially (1-5 days), to spend time with the baby in the incubator the fathers reported they had tried to help their partner, reassuring her that her reaction was normal, and never forcing her to see the infant (ID 5; Table 5.2). Once the clinical conditions improved, the fathers felt relieved of the huge weight of coping alone and felt more relaxed and confident about the future (ID 6; Table 5.2).

Fathers' satisfaction with NICU nurses' support for mother

Seventeen fathers (85%) indicated that they were extremely satisfied with the nurses' support for their partners – which included emotional reassurance, provision of information and explanations and encouragement for participation in their infant's care. The NICU staff appeared to be qualified and competent, and fathers said that they had nothing to complain about (ID 4; Table 5.2).

Three fathers (15%) indicated that although they were generally satisfied with the nurses' support for their partner, the provision of information about how and when to care for the infants tended to be based on the particular nurse's point of view, not on nursing guidelines and standards of care. This situation has created some confusion, and contributed to a partially negative experience of care (ID 14; Table 5.2).

Mother's care for the infant

Observing mother engaged in caregiving

Nineteen fathers (95%) had experienced positive feelings (joy, tenderness, pride, and serenity) while seeing their partner caring for the infant (ID 1; Table 5.2). Only one father reported having his sense of joy reduced by sorrow due to the hospital situation. For all the fathers, the positive feelings were heightened by their awareness of the risks, difficulties and worries over their infant's health (ID 9; Table 5.2). These positive feelings were not weakened by any awkwardness or sense of fault that

emerged during their partner's caregiving (ID 3; Table 5.2). Furthermore, ten fathers (50%) said that watching their partner engaged in her caregiving routine had represented a sort of return to normality, the achievement of a condition of completeness in which they felt they were a "normal" family (ID 15; Table 5.2).

Mother has "something extra"

Six fathers (30%) explicitly said that their partner had "something extra" in caring for the infant (ID 7; Table 5.2). These fathers described a special, indissoluble bond between mother and infant, a bond built during pregnancy – "when the baby was in her mother's belly". So, one father reported that for him it is more beautiful to see the mother holding their son than to think of himself holding the son (ID 7; Table 5.2). However, four of these fathers described themselves as directly involved in caregiving activities to the same extent as the mother (ID 16; Table 5.2), explaining that saying "mother has something extra" did not mean that they perceived themselves as less important for the infant's development or less involved than the mother, but that parents may have different roles.

Relationships between the couples

Participants spoke about their relationship with their partner.

Collaboration

Nineteen fathers (95%) described a good collaboration with their partner on the division of roles and tasks between them (ID 15; Table 5.2).

Bond

Twelve fathers (60%) felt that the couple's bond had been strengthened by the experience of preterm birth and the stay in the NICU. However, these fathers did not exclude the possibility that this strengthening would have happened with a full-term birth (ID 14; Table 5.2). Seven fathers felt no differences between the couple's bond before and after the preterm birth (ID 2; Table 5.2). The remaining father experienced a deterioration of the couple's bond (ID 18; Table 5.2) – it should be noted, however, that their newborn's medical condition was extremely critical.

A positive correlation was found between fathers' and mothers' DAS score ($r=0.787$).

DISCUSSION

The aims of this multi-method study were threefold: to explore fathers' experiences of supporting their partner during their infant's stay in the NICU, to explore fathers' experiences of their relationship with their partner during the period in the NICU, and to examine any possible association between themes that emerged from the fathers' interviews and the characteristics of infants and parents. The results are very interesting and add to the still scant literature on fathers' experiences during their preterm infants' hospitalization in the NICU. Most of the fathers interviewed considered themselves to have the role of protecting both the preterm infant and the mother, minding the family's best interests. This finding is consistent with previous studies (Hagen et al., 2016; Hallström, Runesson, & Elander, 2002; John, Cameron, & McVeigh, 2005; Lindberg, Axelsson, & Öhrling, 2007). Fathers reported having set aside their own needs in order to prioritise the infant's and mother's needs, especially when the newborn's health was in danger (high PERI score). Where the mothers presented serious postpartum complications, the fathers were almost equally concerned about mother and infant, which is in contrast with a Norwegian study (Hagen et al., 2016). where the fathers were more concerned about the mother. However, this might be explained by the small number (N=8) of fathers interviewed in the Norwegian study, and/or by the fact that their interviews were performed between one and six months after discharge from the NICU.

The fathers' most common way of protecting their partners from further upheavals was to avoid showing – and, in some cases, to hide – their own worries and feelings. However, all the fathers' reports suggest that, behind their idealized role as the protector of their partner, they might be hiding the deployment of defence mechanisms protecting themselves from the reality of their own inner experience. It follows that paternal distress tends to be invisible to both partner and NICU staff, which is consistent with previous studies (Hagen et al., 2016; Hugill et al., 2013; Pohlman, 2005). In addition, from our study these fathers' behavior was negatively associated with the presence of sequelae in the infant. This finding may indicate that sequalae are an extra burden, difficult for fathers to handle because of the stressful situation. This interpretation finds support in an Italian study (Cataudella, Lampis, Busonera, & Zavattini, 2016) which showed that the infant's medical condition has an impact on the ability of both fathers and mothers – interviewed at the 3rd month of corrected age – to process the experience of preterm birth.

Several studies (Arnold et al., 2013; Garel, Dardennes, & Blondel, 2007; Koliouli, Gaudron, & Raynaud, 2016) have shown the presence of mothers' feelings of guilt and continual questioning of whether they could have prevented the preterm birth. Some studies (Heidari, Hasanpour, & Fooladi, 2012; Pector & Smith-Levitin, 2002; Sajaniemi et al., 2001) have also revealed maternal rejection of the infant. In common with those studies, about a third of our participants reported similar experiences on the part of their partners, and all these fathers spoke of offering verbal reassurance and of fostering the establishment of the mother-infant bond. We found that observing the partner engaged in the routine of daily care for the infant is important to fathers. They reported feeling satisfaction in being involved in their infant's care, but also being happy to step back, to leave room for the partner's caregiving and her emotional closeness to the infant.

About the couples' relationships, the fact that the degree of collaboration between partners in the division of infant-care tasks was good regardless of the quality of the couple's bond suggests that both parents put the baby's wellbeing first.

Previous studies (Arockiasamy, Holsti, & Albersheim, 2008; Hagen et al., 2016; Hugill et al., 2013; Pohlman, 2005) have found that fathers try to protect themselves and their partners from the emotional impact of becoming a parent in an NICU by adopting stereotypical masculine behaviors and emotional inexpression or withdrawal. Our results, showing that the father's needs, feelings, and difficulties are often hidden and silent, are partially consistent with the previous ones but our findings also shows that keeping feelings silent demands a great deal of both physical and emotional energy. So much so that three participants were crying during the interview, and once it was over, they waited to recover fully before rejoining their partners. The fathers' emotional malaise is more difficult to acknowledge than the mothers'. All the fathers reported spontaneously that speaking about their feelings and worries was a positive experience, with possible beneficial effects after the interview: for example two mentioned the improvement of the quality of father–infant interaction and another the increase of the time spent in the NICU. We might therefore regard interviews with fathers as a routine assessment tool for reviewing the emotional health of fathers of preterm infants admitted to an NICU, in line with other Italian research (Candelori, Trumello, Babore, Keren, & Romanelli, 2015). Better emotional conditions in fathers may have a positive influence on both the support provided to their partners and their involvement with the infant.

Finally, it should be noted that the mean CES-D score for fathers was 14.9 (SD = 7.7), indicating that the sample did not show a significant depressive symptomatology. We believe that this reinforces the value of the themes emerged from the interviews because such themes would not seem dictated by an ongoing negative emotional state.

Our study has clear limitations. First, it is based primarily on fathers' self-reports that might reflect neither the actual support they gave to their partners nor their partners' perception of the support received from the fathers. This potential problem is reduced by the fact that the mothers' answers to the questionnaires and ethnographic observations in NICU were also used to assess consistency of data. Second, in NICU, since that note-taking in the course of participation would be disruptive and result in limited fathers' natural participation, fieldnotes are write up as soon as possible after the periods of observation creating the risk of a rapid forget or confuse whole episodes, and more generally, a decrease in the quality of the notes. Third, the self-selection of fathers who agreed to be interviewed could introduce a bias in the themes that emerged from the interviews. In this regard, however, it is important to note that more than half of fathers agreed to be interviewed. Fourth, the findings may not be applicable to all preterm fathers, whose experiences may differ along cultural lines (Stefana, 2017) or as a function of the staff attitudes and visiting policies of the NICU.

Our study also has some advantages, for example the use of a multi-method approach, the use of a male interviewer (fathers prefer to talk to a male researcher or health care provider) (Arockiasamy et al., 2008; Zaharias, Piterman & Liddell, 2004) not associated with the hospital (this may allow more open and honest responses) (Sawyer et al., 2013), the greater sample size than in other studies based on in-depth interviews (Provenzi & Santoro, 2015) and the implications for family support in the NICU.

CONCLUSION

This study makes an original contribution to the scant literature on fathers' experiences of supporting their partners during their preterm infant's stay in the NICU. The study suggests the possibility of using interviews as a routine assessment tool for reviewing fathers' emotional states. Understanding fathers' inner experiences helps the NICU staff to offer them tailored support, thus also helping both mothers and infants.

Table 5.2 *Themes, quotes, and number of interviews in which themes were mentioned*

THEME	ILLUSTRATIVE QUOTES
Support for mother	
Putting infant's and mother's needs first	"I haven't worried much about myself over the last period, I mean, if I am not at work I am here to be close to my children, and even when I am home, where there are two small empty beds, my first preoccupation is to try and support my wife" (Father 5).
	"I was afraid of losing both my little baby and my wife because she too had had some [health] problems. I spent those days going to see my wife on the lower floor and my child upstairs" (Father 16).
	"Initially, the first two days, the attention was all on them, on their health, on their progress… I mean, I was focused on them" (Father 11).
	"Most of all because the father, in the children's birth is basically not considered by anyone as a person taking part in the trauma of birth, at least for what I have observed, in the sense that everyone you meet asks how the baby is doing, how the mother is doing, but no one ever asks how the father is doing. The dad needs to be supported, needs to unload, otherwise he experiences some difficulties… There is a psychological trauma for the father too, I feel it and I have felt it directly… Indeed, I can even tell everyone that it is the father who holds the psychological load, who [takes on] everything" (Father 3).
	"Then I talked to my wife about this. After a month things had got better, the three of them were fine, and I told her that it seemed to me she did not think I might have my needs too, and I told her 'look, if you don't understand this the risk is that I can't take it anymore'" (Father 7).
	"I have supported and still support my wife because we are still not completely back to normal. Our permanence in the neonatal intensive care unit is not over yet and I have to say that my wife starts feeling the weight of these days which seem endless. We are near the end and so it is important for me to be close to her, help her, support her, encourage her. I keep my needs to myself, we could say that in this period my priorities are the three people I love the most: my children and my wife" (Father 20).
Suppression or hiding of worries, negative emotions and needs	"I had my crises too, I had moments of discouragement or moments when I felt powerless, but I tried to react, mostly for my wife's sake, I absolutely could not show myself weak or discouraged to her, I have always hidden my moments of weakness from her to encourage her, to support her, to let her regain her good mood, her hopes, to reassure her that everything would be fine, that our children would be normal and healthy like all the others" (Father 20).
	"I was always telling my wife I was calm, that everything would be fine, I would not show my anxieties and fears that [child's name] would die. Only once did I burst out: we were home, when I entered the bedroom she was watching a video of [child's name] and when I saw his little face covered in tubes I burst out crying. I later regretted it because I am afraid I charged her with yet another load rather than support her" (Father 5).

	"I think it is right to share everything about the little girl, starting from our emotions, both positive and negative. If we are disheartened, we are disheartened together, and equally, we rejoice together" (Father 17).
Counteracting the sense of guilt	"My girlfriend kept saying 'I made him come to life too soon' but I kept telling her 'it wasn't you, nature wanted it to be like this, you did everything you could to prevent this from happening'" (Father 8).
	"I had thoughts and feelings of guilt, I asked myself if I could do more or something different. Very simply, I thought that instead of going to the amusement park with my son and pregnant wife I could have stayed home… I still haven't thought whether this would have changed anything, perhaps I am afraid of thinking too much about it, because one blames oneself too much, even for something one is not responsible for. I have been reassured by doctors and friends, and rationally I agree with them, but a background noise still tells me that either I or my wife are responsible for this" (Father 15).
Fear that mother will reject the child	"When she saw him, however, her reaction was positive, I was afraid it would be negative because of what she had told me (the fear she would not feel him as her son) and because of the little tubes and everything else, but I saw her smile instead. Not the first ten minutes, but then she reacted really well, and this was a good thing, a very positive thing, I was very relieved" (Father 13).
	"My wife has suffered and is still suffering very much, for several days she spent more time in the corridor rather than in the [neonatal room] because she suffered too much when she saw him like that, sedated, intubated… she couldn't bear it. I told her that not feeling like seeing him was normal, that it was because she loved him very much and seeing him like that was hard, but that little by little she would be able to spend more time with him. But underneath I was afraid she couldn't manage to be there. Luckily, after a few days she slowly became able to spend more time with him, and I felt relieved, at least about this" (Father 5).
	"In the initial phase, when the mother rejected the baby and she was saying 'take me away, I don't want to see him' I was quite frightened because… my fear was that in the course of time she would reject him, and I asked myself: 'gosh, what will I do? What will happen to me?'. But then, seeing that she slowly loosened up as days went by, I too regained more confidence and I became calmer" (Father 6).
Fathers' satisfaction with NICU nurses' support for mother	
	"The nurses were excellent, they have supported her initially when she didn't feel like staying with [partner's name], they helped her taking confidence, touching her, and they told us how important it was for us to be there with her. And when there was something we could do as parents, like changing the nappy, they got us involved and taught us how to do it" (Father 4).

	"All staff here are exceptional, we thought that everything was very good. The only thing was that the guidelines on what we should do as parents with the little girls, for example how long to wait to bottle-feed them after the bath, depends on each nurse and there are no general guidelines. This can be a bit confusing, especially for [partner's name] who sometimes didn't really know what to do and she felt like an incapable mother" (Father 14).
Mother's care for the infant	
Observing mother engageed in caregiving	"I am proud and happy to have a wife who knows how to be a mother, this makes me calm" (Father 1). "When I saw her change the nappy I felt extremely happy, because I saw my wife's glistening eyes while she was changing her own girls, who were born after endless sacrifices. I always have to go back to the fact that it was a difficult pregnancy, there is happiness now, knowing what has happened before. This could seem banal or stupid, but having had a difficult pregnancy, seeing my wife changing the nappies of babies who, according to some doctors, mightn't even have been born, there is always joy. Joy for everything, from breastfeeding to bottle-feeding" (Father 9). "I was pleased because I saw that, after all, even if she had same difficulties that I had when it was the first time for me to do several things, 'she could finally take care of our children'" (Fathers 3). "It was almost normal to see my wife take care of [child's name] but not a banal normality, a normality that relieved me in the sense that 'she was changing our girl's nappy, after all that we have been through, we are feeding her'" (Father 15).
Mother has "something extra"	"Mums are a different thing, you must be a bit blind not to see it, and I think you can see it here. It is not only the man's awkwardness compared to their almost natural spontaneity; I say almost because this is not a natural context for the ladies, but these babies are part of them, and you can see it… it is more beautiful to see your wife holding your baby than to think of yourself holding this bundle" (Father 7). "We are a team, so one can do something and at the same time the other does something else. If she needed to take her coffee I would stay and do what was needed, and vice versa. She comes here more often, meaning every day, because I need to work, but we see ourselves as a team, so either one or the other does it" (Father 16).
Relationship between the couples	
Collaboration	"My wife is excellent with the girl, so we preferred to maintain this balance, and not to interrupt something that was working well. So, in this period I took care of the family, in the sense that I kept the group together, because we have another girl and I went to take her from school, I cooked for her, I did the shopping etc. My wife took more care of [child's name] instead, because she showed to be more able than me from this point of view. In my opinion, if we both concentrated on the same aspect we would risk losing our family balance, this is how we felt like doing" (Father 15).

Bond	"If I have to think today of how we were before, we are certainly closer one to the other, you can see now that we are a family, while before everyone could go and mind his or her own business, but now we are a family. But for me nothing would have changed even if they were born exactly on the ninth month" (Father 14). "We have always been united, we are as close as we used to be, no more no less" (Father 2). "The situation as a couple is very difficult, you have to handle it in a certain way… paying attention to everything, to how you speak, because of this particular period and because it is very critical. Tension is extremely high, and consequently you can have a bit of confrontation, to put it like this. We also need to carry on with our relationship as a couple and everything else, but it is very difficult, extremely difficult to manage all the other nuances of a normal life when you have a situation of this kind, and so it is not easy" (Father 18).

APPENDICE

Domande componenti l'intervista somministrata ai padri *

- Come descriverebbe la Sua esperienza in TIN?
- C'è qualcosa che l'ha particolarmente colpita della TIN?
- Che spazio c'è per le Sue emozioni quando è in TIN?

- Cosa ha significato per Lei diventare papà di [*nome del bambino*]?
- Ricorda la prima volta che ha visto [*nome del bambino*]? E la prima volta che lo ha toccato?
- C'è qualcosa che l'ha particolarmente colpita di [*nome del bambino*]?
- Si sente impegnato con [*nome del bambino*]?
- Ha eseguito attività assistenziali (cambio del pannolino, allattamento, bagnetto, ecc.) su [*nome del bambino*]?
- Quali sentimenti prova verso [*nome del bambino*]? Erano gli stessi anche appena nato?

- Ha avuto modo di parlare con sua moglie di quest'ultimo periodo (nascita pretermine e ricovero in TIN) e di quello che comporta per voi?
- Le è capitato di guardare [*nome della moglie/compagna*] mentre provvedeva alle cure di [*nome del bambino*]?
- Quali sentimenti prova verso [*nome della moglie/compagna*]? Erano gli stessi anche prima della nascita di [*nome del bambino*]? E prima della gravidanza?
- Durante il ricovero di [*nome del bambino*] Le è capitato di sostenere emotivamente [*nome della moglie/compagna*]? In che modo?
- Si è modificato il rapporto Lei e [*nome della moglie/compagna*] a seguito della nascita di [*nome del bambino*]?
- Vede il non avere portato a termine la gravidanza come un fallimento di [*nome della moglie/compagna*]?
- Come le sembra il rapporto tra sua [*nome della moglie/compagna*] e il personale del reparto?

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* Le domande dell'intervista sono state elaborate sulla base di una triplice fonte: la revisione della letteratura, il confronto con psicologi e neonatologi operanti in varie Unità di Terapia Intensiva Neonatale (TIN), e una serie di colloqui pilota svolti con padri che non erano inclusi nello studio.
L'intervista è composta da 16 domande a risposta aperta che coprono due domini principali: (a) l'esperienza dei padri nella relazione col neonato pretermine ricoverato in TIN, e (b) l'esperienza dei padri nel sostegno alla propria compagna. Trattandosi di una intervista semi-strutturata, il fraseggio delle domande è flessibile e l'intervistatore può adattarlo a seconda dell'andamento dello specifico colloquio (Lune & Berg, 2017; Silverman, 2016). Il metodo di colloquio semi-strutturato consente all'intervistatore la libertà di cercare sia chiarimenti sia elaborazioni sulle risposte dei soggetti intervistati, approfondendo in tal modo il grado di esplorazione (Leech, 2002; Spradley, 1979). Questo approccio apre anche alla possibilità di individuare argomenti che potrebbero non essere stati inizialmente considerati importanti dal ricercatore, ma che possono svilupparsi in temi significativi all'interno dei risultati (Bryman, 2012).
L'intervista inizia dopo un'apertura informale, volta a mettere a proprio agio l'intervistato. Ogni soggetto è invitato a descrivere la propria esperienza in TIN, ed è incoraggiato a parlare liberamente in forma narrativa. Alla fine della parte narrativa dell'intervista le specifiche domande che non hanno già trovato risposta sono verbalizzate. Tali domande sono integrate da domande-sonda quali "Potrebbe dirmi di più su questo?" oppure "Me ne può parlare?". Ogni intervista termina dopo che al partecipante è stato chiesto se c'è qualcos'altro di cui ritiene importante parlare.

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