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Psychometric properties of a 20-item version of the Maternal–Fetal Attachment Scale in a sample of Italian expectant women

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ARTICLE INFO

Article history:

Received 16 August 2015

Received in revised form

9 November 2015

Accepted 30 December 2015

Keywords:

Maternal Fetal Attachment Scale (MFAS)

Reliability

Validity

Pregnancy

Psychometric testing

Midwives

ABSTRACT

Objective: the Maternal–Fetal Attachment Scale (MFAS), a 24-item self-report questionnaire to measure the antenatal maternal feeling towards the unborn baby, was introduced by Mecca Cranley in 1981. Despite the widespread use of the questionnaire in clinical and research contexts, issues exist about its psychometric properties. An analysis of the literature showed the need for studies aimed at reviewing the MFAS by eliminating some items and modifying and “modernising” others. This study started from these suggestions and aimed to investigate the psychometric properties of a modified 20-item Italian version of the scale.

Design: the original MFAS was back translated and then administered to a pilot sample of 20 pregnant women in order to identify items hard to understand, inappropriate or ambiguous. On the basis of qualitative information derived from this pilot phase, we developed a 20-item Italian version of the MFAS that was later administered to a large sample of pregnant women.

Setting: antenatal education classes carried out in public and private structures of Italian central and insular regions.

Participants: a sample of 482 women in middle and late pregnancy, attending antenatal education classes between February 2013 and October 2014.

Measurements: the modified MFAS was administered together with other scales measuring maternal–fetal attachment, psychological well-being, relational variables. Internal consistencies were evaluated using Cronbach’s alpha. Nomological validity was assessed via Pearson correlations. Exploratory and confirmatory factor analyses were used to test the factor structure.

Findings: the hypothesised relationships with external criteria were partially substantiated. Exploratory factor analyses suggested a three-dimensional structure. Confirmatory factor analyses provided general support for an oblique three-factor model. Internal consistency was adequate for the total scale and for two of the three subscales.

Key conclusion and implications for practice: the 20-item Italian version of the MFAS is a reliable measure of maternal attachment to the fetus in Italian women. Cranley’s five dimensions were not confirmed; instead, three factors emerged that could be renamed ‘Future parental role-taking’, ‘Present interaction with the baby’ and ‘Giving of self and responsibility to the unborn child’. As maternal–fetal attachment is considered a predictor of the quality of the postnatal mother–child relationship, the MFAS could be a helpful tool in pre- and perinatal research and midwifery care to develop prevention programs based on women specific needs. Moreover, the availability of this questionnaire can assist in expanding research and in facilitating trans cultural comparison in issues related to pregnancy.

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<http://dx.doi.org/10.1016/j.midw.2015.12.012>

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Introduction

The process of transitioning to motherhood has its roots in the gestational period (Deutsch, 1945; Winnicott, 1958; Benedek, 1959; Bibring, 1959; Cranley, 1981; Grace, 1989; Stern, 1995), when

the mother–child relationship begins to lay its foundations as a result of physiological and psychological events (e.g. Shieh et al., 2001; Della Vedova et al., 2008; Ustunsoz et al., 2010; Velotti et al., 2011; Kinsey and Hupcey, 2013; Castellano et al., 2014).

Since the 1980s, authors have referred to the antenatal maternal feeling towards the unborn child in terms of attachment (e.g. Cranley, 1981; Müller, 1992, 1993; Condon, 1993). Mecca Cranley inaugurated this approach in 1981, by introducing the construct of *maternal–fetal attachment*, defining it as ‘the extent to which women engage in behaviours that represent an affiliation and interaction with their unborn child’ (p. 282). The introduction of this construct has substantially contributed to the development of a fruitful area of investigation focused on attitudes, behaviours, representations and fantasies that expectant women gradually develop towards their unborn babies. In this perspective, maternal–fetal attachment acts as a facilitator of the transition to motherhood, representing, at the same time, evidence of the transition itself.

Background

Cranley (1981) introduced the first self-report questionnaire for the measurement of maternal–fetal attachment, the Maternal–Fetal Attachment Scale (MFAS). She defined six aspects of the early bonding of the expectant woman to the fetus that were used as labels to designate the subscales of the MFAS, the content of which was obtained by consulting with other clinicians and a group of Lamaze teachers. Once assembled, the questionnaire was revised by nurse experts in the field of maternal and child health and was submitted to a group of pregnant women that checked it for comprehension and appropriateness of items (Cranley, 1981, p. 282). The resulting questionnaire included 37 items. A subsequent analysis led to the elimination of 13 items for logical or empirical reasons, or both. A major change was the elimination of an entire subscale (*Nesting*), due to its poor reliability and the realisation that the activities it suggested were of a different domain than were the other five subscales (Cranley, 1981, p. 282).

In Cranley’s (1981) final version, the MFAS is a 24-item questionnaire organised into five subscales corresponding to five aspects of the relationship between mother and fetus: (1) *Differentiation of self from the fetus* (DIFFSLF), (2) *Interaction with the fetus* (INTERACT), (3) *Attributing characteristics and intentions to the fetus* (ATTRIBUT), (4) *Giving of self* (GIVINGSL), and (5) *Role-taking* (ROLETAK). Responses are rated on a five-point scale (from 1 = *absolutely no* to 5 = *absolutely yes*) and higher scores are associated with higher levels of maternal–fetal attachment.

Since its publication, the MFAS has been the scale most widely used by researchers to assess maternal–fetal attachment (Van den Bergh and Simons, 2009), although it has also been widely criticised (see Doan et al., 2003). The validity of the scale seems to be threatened by the fact that construction of its subscales was not based on statistical techniques, but rather, on the experts’ theory and content evaluation.

Subsequent studies (Müller and Ferketich, 1992; Sjögren et al., 2004; Lauriola et al., 2010) carried out factor analyses on MFAS items, none of which fully supported Cranley’s five subscales. Müller and Ferketich (1992) performed an exploratory factor analysis (EFA) to test the factorial validity of the MFAS on two different datasets – one composed of 371 subjects and the other of 310 subjects. They used a 23-item version of the scale: the item ‘I feel my body is ugly’ was deleted as it was considered an extraneous construct. The resulting solutions failed to correspond to the original subscales and were also different from one another, revealing two factors and three factors, respectively. Sjögren et al. (2004) used a shortened and adapted version of the questionnaire (17 items, four-choice response format instead of the five-choice

format) with a sample of 76 Swedish expectant mothers. They performed a principal component analysis that revealed four factors. Also Van den Bergh (1989, reported by Van den Bergh and Simons, 2009), using a sample of 256 pregnant women, identified four factors. Lauriola et al. (2010) used confirmatory factor analyses (CFAs) to assess the factorial validity of an Italian version of the questionnaire. They considered the original five-factor model suggested by Cranley (1981), and a one-factor model supporting the validity of the scoring schema of the total score (Cranley, 1992). These authors found that the one-factor model had a statistically worse data fit than did the multidimensional one; however, none of them was fully supported by the CFA results.

Regarding the reliability, Cranley (1981, p. 282, 283) reported an alpha value of 0.85 for the total scale, and alphas ranging from 0.52 (*Giving of self*) to 0.73 (*Role taking*) for the five subscales. Subsequent studies reported alpha values ranging between 0.72 (Anand and Hima, 2012) and 0.92 (reported by Van den Bergh and Simons, 2009) for the total scale, and between 0.34 (Lauriola et al., 2010) and 0.89 (reported by Van den Bergh and Simons, 2009) for the subscales.

Overall, researchers (e.g. Müller and Ferketich, 1992; Doan et al., 2003; Lauriola et al., 2010) still considered the multidimensional model of the MFAS promising and improvable, and stressed the need for further studies aimed at eliminating some items and modifying and “modernising” others. In designing our study, we started from these suggestions. Moreover, we found that, at present, there is a lack of data regarding the external validity of the MFAS with respect to constructs theoretically related to maternal–fetal attachment in the Italian culture and, most importantly, there is a lack of international data on the predictive validity of the instrument with respect to the quality of the postnatal mother–infant relationship. In an attempt to overcome these shortcomings, we designed a study aimed at extensively investigating the validity and reliability evidence of the MFAS with a large sample of Italian expectant mothers.

Methods

Aim and hypotheses

This study aimed at examining the dimensional structure, internal consistency and nomological (concurrent and predictive) validity of an Italian version of the MFAS. The convergent validity was assessed by examining the associations of the MFAS with the PAI (Müller, 1993; Della Vedova et al., 2008). We hypothesised that the MFAS scores would positively correlate with the PAI scores as the questionnaires both measure the maternal–fetal attachment (*Hypothesis 1*). In order to explore the nomological validity of the MFAS, its relationships with dyadic adjustment in the couple relationship (DAS; Spanier, 1976), perceived social support (MSPSS; Zimet et al., 1988), maternal antenatal depression (CES-D; Radloff, 1977) and postnatal maternal attachment to the child (MPAS; Condon and Corkindale, 1998) were examined.

Spanier (1976) defined dyadic adjustment as “a process, the outcome of which is determined by the extent of troublesome dyadic differences, interpersonal tensions and personal anxiety, dyadic satisfaction, dyadic cohesion, and consensus on matters of importance to dyadic functioning” (p. 17). Childbirth represents a major life event in which couples have to negotiate extensive personal, familial, social and often professional changes (Castellano et al., 2014). A relationship with the father of the baby close, satisfying and characterised by consensus on relevant issues can foster the woman’s psychological well-being during pregnancy, promoting the development of maternal–fetal attachment.

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