

Grof's Basic Perinatal Matrix Theory: Initial Empirical Verification.

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Abstract

Grof's theory of Basic Perinatal Matrices (BPMs) (Grof, 1975, 1985, 1988; Grof & Bennett, 1992) was tested via the development of subjective experience self-report scales, their inter-correlations, and correlations between them and the Parental Bonding Instrument (PBI) (Parker, Tupling, & Brown, 1979). The sample consisted of 192 non-clinical participants (149 female, 39 male) with a mean age of 34 years. Items for the BPM questionnaire were constructed using concepts extracted from Grof's writings, selected according to expert rater judgments and submitted to participants. BPM scales were formed using the maximal internal consistency method. Thirteen of the fourteen BPM and BPM-PBI inter-scale correlations predicted by Grof's theory reached significance, thus supporting the BPM theory. A post hoc analysis of the data of the hypothesis that was not supported indicated that BPM3 may be a multidimensional construct. Data gathered using the BPM questionnaire provided quantitative support for the qualitatively developed BPM theory. With more extensive validation the BPM questionnaire could be used in assessing BPM subjective experiences in individuals for clinical and research purposes.

Most systems of psychotherapy rely on subjective experience of the client as an essential factor in psychopathology and the process of therapeutic change. Jung (1951/1968) highlighted the importance of "psychic reality"; the cognitive perspective of Beck, Rush, Shaw, and Emery (1979), makes use of the concept of the "phenomenal field" of the individual; Clarkson's (1989) description of Gestalt theory, pointed to the awareness of "the cycle of Gestalt formation and destruction" (p. 29); and Rosen (1993), a modern Jungian analyst, emphasised the inner experience of "egocide and transformation" (p. 61) as a central factor in overcoming despair. It is apparent that the subjective component of psychotherapy is important in each approach to therapy, even though the term subjective experience is not explicitly mentioned in the above examples. Therefore subjective experience is a key variable in psychotherapy and psychopathology. However, subjective experience correlates of therapeutic change processes in psychotherapy have not been adequately verified, quantified or investigated (Greenberg, Elliott, & Lietaer, 1994). As a result, it is argued that there will be therapeutic benefits gained through research into subjective experiences which are related to therapeutic change (Greenberg, et al., 1994).

Although there is no precise definition of subjective experience, for the purpose of this study it is defined as the phenomenology of experience and includes awareness of any phenomenon that is not directly perceivable by another person: introspective awareness and projection of internal conditions onto the world. These include: thoughts, emotions, perceptions, desires, dreams, memories, imaginings, and suffering, pleasure, sense of self and a range of constructions of reality. Subjective experience is differentiated from objective experience in that objective experience is capable of independent verification. This can occur via the use of mechanical recording devices or through direct confirming observations by other people. Examples of objective experience include the accurate perception of physical objects and interpersonal behaviour.

Grof's (1975, 1985, 1988; Grof & Bennett, 1992) Basic Perinatal Matrix (BPM) theory is based to a large extent on the subjective experience of individuals. The theory arose from the repeated observation that individuals in experiential psychotherapy and self-exploration encounter patterns of subjective experience that are interpreted as, or resemble, the birth process (Grof, 1985; Grof & Bennett, 1992). These observations

have been systematised, leading to the categorising of experience into four main groups termed Basic Perinatal Matrices 1 to 4 (Grof, 1985). The BPM theory is one component of Grof's theory of therapeutic processes which relies on subjective states and sequences of subjective experience as significant factors in problem resolution and symptom reduction. Grof (1985), states that "Effective eradication of psychopathological problems does not come through alleviation of the emotional and psychosomatic symptoms involved, but through their temporary intensification, full *experience*, and *conscious integration*." (p. 360) (*italics added*). The objective of the current research is to test Grof's BPM theory (1975, 1985, 1988; Grof & Bennett, 1992).

BPM theory and research

The research conducted by Grof (1975, 1985; Grof & Bennett, 1992) had the aim of examining the general principles, regularities in the content, character and course of experiential psychotherapy, and of constructing an appropriate conceptual framework to make sense of the available data. His approach involved qualitative analysis of primary source material over approximately forty years of research and clinical practice.

Research observations resulted in the recognition that experiences tended to form four thematic clusters, experiences were also divided into two main classes, positive and negative. The four groups of experiential themes identified were named BPM1, BPM2, BPM3, and BPM4. Subjective experiences associated with BPM1 may be pleasant or painful, and include feelings of unity, satisfaction, happiness, appreciation of beauty, 'melted ecstasy', or alternatively, paranoia, and disgust. Experiences relating to BPM2 are painful and involve a sense of meaninglessness, depression, feelings of inferiority, guilt, deprivation, humiliation or perceiving oneself as decrepit. BPM3 experiences are described as highly energised states of a negative or positive polarity, for example, agitated depression, obsessive thoughts, compelling desires, anxiety, aggression, sexually deviant fantasies, conflict, 'volcanic ecstasy' and desire for adventure. Positive experiences that can characterise BPM4 are satisfaction, fulfilment, feeling successful, expansiveness, abundant energy, 'illuminative ecstasy', redemption, 'rebirth', global companionate affection, absorption in intimate relating, minimal defensiveness, charitable inclinations, brotherly and sisterly feelings (Grof, 1985).

While there may be differences between Grof's BPMs and dimensions of affectivity there also appear to be similarities. As mentioned, BPM experiences can be divided into positive (pleasant) and negative (painful) groups. Grof (1985), states, "According to the nature of the emotional charge, we can distinguish negative governing systems ... BPM II, BPM III, negative aspects of BPM I, ... from positive governing systems ... BPM IV, positive aspects of BPM I, ..." (p. 350). In a similar way affect has been divided into polar groups: good and bad (Plutchik, 1991), positive and negative (Russell, 1980), and expansive and contractive (Mahoney, 1991). Grof's BPM model differs from the affect models in that the BPMs also include dimensions other than affect. For example, the BPMs are said to: influence one's philosophy of life; influence perception and interpretation of environmental conditions; be associated with specific symbols, archetypes, desires and wishes; and have a purpose, motive or dynamic oscillating trend gradually moving one from the experience of extreme suffering (eg., facets of BPM2) toward the resolution of suffering (eg., facets of BPM4).

Methodology in BPM research

The research methodology used by Grof has several strengths, for example, extensive use was made of triangulation (Berg, 1989) as a method of confirming data patterns. Several types of information and sources of information were used as an aid to compiling a rich and varied database which allowed cross-validation of BPM theoretical constructs. Thus a favourable aspect of the research is the extreme detail of some of the presentations of the experiences of individuals (Berg, 1989). Assuming most of the research data are of this quality, the degree of detail may minimise the misinterpretation of peoples' experiences.

The content of research and the conclusions drawn are dependent on the orientation and methodology used by the researcher. Therefore to further the validation of theories developed using one methodology it is crucial to extend research to encompass other methods. BPM research can be extended by using quantitative methodology that overcomes some of the limitations inherent in qualitative research. Quantitative research into the BPMs can contribute in several important ways.

1. By increasing the accuracy and reliability of the methods and instruments used in gathering and analysing the material and drawing conclusions (Cook & Campbell, 1979).
2. Through the development of clear and explicit criteria for categorising individuals' experiences.
3. Constructs can be unambiguously defined and operationalised according to mathematical analysis of the data in combination with content analysis.
4. Quantitative research could eliminate researcher reflexivity (Giddens, 1991) in relation to interpreting individuals' experience and drawing conclusions concerning the BPMs (ie., the data are self-explanatory, rather than involving researcher cognitive processes which may bias interpretation).
5. Thematic clusters formed by the data are mathematically based, and are therefore 'objective' and efficient ie., mathematical methods allows a model to be developed that fits the data most accurately.
6. Quantitative research could allow independent verification of the BPM constructs through using a different data gathering method (eg., a questionnaire), using a different method of conceptual selection of BPM constructs (eg., via the use of expert raters), and using a different method of extracting patterns from the data (eg., the use of mathematical analytical and synthetic techniques).

Inclusion of a quantitative component could aid in the investigation of constructs that are described as part of the BPM theory. This could occur through a form of content analysis of participant responses to items, resulting in the development of an assessment device that could be used by researchers. A key aspect of continuing research in this area involves not only examination theory validity but also the pragmatic issue of the clinical usefulness of the findings (American Psychological Association, 1985).

As yet no quantitative tool has been developed to assess subjective experiences associated with the BPMs. The first aim of this research is to develop a group of scales that reflect BPM subjective experiences. The second aim involves a preliminary test of the validity of the BPM theory and constructs through examination of the association between each pair of BPM constructs, and between BPM constructs and the retrospective memories of experiences during childhood.

Grof's qualitative research into the dynamics of subjective experience and personality suggests a link between experience in childhood and personality in adulthood. For example, he states,

...our present emotional life is, to a great extent, shaped by events from the 'formative' years of our lives, that is, the years before we learned how to articulate our thoughts and feelings. The quality of mothering we received, the family dynamics, the traumatic and nourishing experiences we had at that time, play important roles in shaping our personalities (Grof & Bennett, 1992, p. 21).

The BPM theory is supported by clinical and anecdotal reports (Grof, 1985). Part of this support arises from Grof's (1985) observations that clients' retrospective memories of the quality of the care-giving environment of their childhood is related to the development of adult experiences and psychopathology. This development occurs via the selective amplification and attenuation of active and latent BPM characteristics (Grof, 1985). For example, the post-natal effects of a traumatic birth dominated by BPM 2 experiences can be reduced by the experience of adequate post-natal care. Conversely, traumatic post-natal care after a relatively non-traumatic birth can lead to the exaggeration of painful experiences associated with the negative components of BPM 1, BPM 2 and BPM 3.

Grof's qualitative observations on the links between perception of the care-giving environment and the development of the personality and its pathology are consistent with Parker's (1983) quantitative research, which demonstrated an association between adults' retrospective memories of childhood and adult affective experiences. According to Parker (1983), one component of the care-giving environment is parental care. Parental care is a multifaceted construct consisting of the relational qualities and actions associated with warmth, enjoyable communication, affection, understanding, praise, helpfulness and the ability of parents to soothe their child. The Parental Bonding Instrument (PBI) (Parker, Tupling, & Brown, 1979) was developed to retrospectively assess the degree of care and over-protection individuals experienced as children, as coming from their parents. It is based on the developmental theories espoused by Bowlby (1969), Rutter (1972) and Ainsworth, Bell, and Stayton (1975). To date there has been no attempt to provide quantitative validation of the BPM theory, or BPM constructs, using retrospective memories of degree of parental care. Therefore, the second aim of

this research is to assess quantitatively the validity of the BPM theory by examining the associations between BPM scales and the retrospective memory of the degree of parental care using the PBI.

In summary, this research aims to construct a questionnaire using the BPM concepts, to assess the fit between Grof's theory of BPMs (Grof, 1985) and the BPM questionnaire inter-scale relationships, and to examine the association between the BPM scales and recollections of childhood as assessed by the maternal and paternal care scales of the PBI (Parker, et al., 1979) as components of BPM theory validation.

Two groups of hypotheses were tested. The first group consisted of six hypotheses, based on Grof's (1985) description of the BPMs as being either positive or negative experiences. These descriptions resulted in the following predictions of associations between BPM scales. It is predicted that the BPM1 and BPM4 scales, and the BPM2 and BPM3 scales will be positively correlated, and the BPM1 and BPM2 scales, the BPM1 and BPM3 scales, the BPM2 and BPM4 scales, and the BPM3 and BPM4 scales will be negatively correlated (see Appendix A). The second group consisted of eight hypotheses which predicted associations between the BPM scales and the PBI parental care scales (see Appendix A). The first four predict negative correlations between the following pairs of scales: the BPM1 and PBI maternal care scales; the BPM4 and PBI maternal care scales; the BPM1 and PBI paternal care scales; and the BPM4 and PBI paternal care scales. The second set of four hypotheses predict positive correlations between the following pairs of scales: the BPM2 and PBI maternal care scales; the BPM3 and PBI maternal care scales; BPM2 and PBI paternal care scales; and the BPM3 and PBI paternal care scales.

Method

Participants

Three hundred and eighty questionnaires were distributed to a non-clinical sample, and one hundred and ninety-two were returned. Of the 192 participants, 149 were female and 39 were male. The mean age was 34 years, the standard deviation was 16 years, maximum age was 75 years and the minimum age was 18 years. Participants were volunteers gathered from first and second year university classes, attendees at public lectures in psychology, administrative staff of two universities, acquaintances of the researcher, attendees at a personal growth group and trainees in experiential therapy.

Materials

Basic Perinatal Matrix Questionnaire

A Basic Perinatal Matrix questionnaire was constructed for this research. See the procedure section for the BPM questionnaire details and the scale construction process.

Parental Bonding Instrument (PBI)

The PBI (Parker, et al., 1979) was designed to measure the retrospective memory of respondents perception of maternal and paternal care and over-protection. The PBI was used because of its applicability to the hypotheses originating in the BPM theory, its psychometric properties, and because it was developed and normed in Australia.

The PBI consists of two scales relating to each parent ie. maternal care and over-protection, and paternal care and over-protection. Parker et al. (1979) indicate that the scales may be used separately. The care scales of the PBI were submitted to participants. The over-protection scales were omitted, partly to reduce the length of the questionnaire and partly because research has indicated that the care scales are more highly correlated with a range of psychological factors.

Twelve items make up each care scale with six items being reversed scored (items 1, 4, 5, 6, 7 & 10). The items are scored on a four point Likert scale varying from 0 to 3 and labeled "very like" to "very unlike". Once items have been reversed scored they are

summed to provide a total maternal care score and a total paternal care score. High scores indicate retrospective memories of parental care, whereas low scores indicate retrospective memories of a low level of parental care. The minimum possible scores for the care scales are 0, the maximum possible scores are 36.

Test-retest reliability for the care scales, 3 weeks between testing sessions, resulted in a Pearson correlation coefficient of .761 ($p < .001$) (Parker, et al., 1979). Split-half reliability for the care scale was .879 ($p < .001$). Concurrent validity was calculated by the correlation between the care scales and 2 raters independent assessment of 65 participants perception of parental care. This resulted in a Pearson correlation coefficient of .772 ($p < .001$) for one rater and .778 ($p < .001$) for the second rater.

The construct validity relating to parental care was supported by factor analysis in which the 12 items of each care scale loaded significantly on the first factor of a varimax rotated factor analysis (Parker, et al., 1979).

Procedure

Basic Perinatal Matrix Questionnaire construction

The aim of the scale construction process was to develop internally consistent scales (Morris, 1978) that reflect the BPM content (Haynes, Richard, & Kubany, 1995; Rogers, 1973). The strategy used to generate items was based on the elaboration of key words (Clark & Watson, 1995) connected with each BPM. This approach was used because the BPM constructs consist of groups of related concepts that had not been narrowly defined by Grof. Therefore it would be difficult to strictly define each BPM by a single unifying concept.

Items were generated by:

- (a) extracting adjectives and phrases from Grof's writings (1975, 1985; Grof & Bennett, 1992) connected with BPM 1, BPM2, BPM3 and BPM4 and building items based on them,
- (b) generating concepts from the adjectives and phrases, then constructing items based on these concepts,
- (c) constructing items which the researcher assumed were conceptually related to the BPM concepts.

This process resulted in the generation of 1492 items. In line with the subjective nature of BPM experiences and a philosophical orientation towards constructivism and subjectivism (Mahoney, 1991), item stems contained adjectives such as "often" and "easily" which allowed interpretation in a subjectively relevant manner.

Grof based his theory on clinical and non-clinical populations. However, the participants for this study were restricted to being taken from a non-clinical population. Therefore, items reflecting extreme clinical states were removed. This reduced the list of items to 1289.

Expert raters (Rogers, 1973) were used to assess the BPM content of each item to maximise content validity (Rogers, 1973) of the final scales. Expert raters were defined as having met all of the following five criteria:

- (a) attended at least two lectures conducted by Grof,
- (b) attended at least one two-day theoretically oriented and experiential workshop conducted by Grof,
- (c) had read at least one of Grof's books relating to the BPMs (eg., Grof, 1975, 1985; Grof & Bennett, 1992),
- (d) had read the four chapters concerned with the BPMs from "The Holotropic Mind" (Grof & Bennett, 1992),
- (e) had applied the BPM theory to themselves or others.

The six raters who met these criteria were three psychologists, one social worker, one business graduate and the researcher.

The items were randomly ordered using a computerised random number generator. The items were given to the expert raters with instructions to classify the items according to five categories, BPM1, BPM2, BPM3, BPM4 and a category representing multiple BPM, or no BPM correspondences. Items were rated independently.

To keep the questionnaire to a reasonable length (approximately 20 minutes completion time) the number of items in each BPM category was limited to between 39 and 45. Items were constructed with a 6-point Likert response scale. Anchor points were labelled: 1 "strongly agree", 2 "moderately agree", 3 "mildly agree", 4 "mildly disagree", 5 "moderately disagree" and 6 "strongly disagree". Participants were asked to complete

the questionnaire and return it in person, or by mail, or place it in a locked letterbox at the Australian Catholic University.

The next stage in the scale construction process involved analysis of the data provided by the 192 participants. This process drew on the works of Kline (1986) and Morris (1978), and involved five steps:

1. Each BPM item was correlated with all other items of the same BPM category.
2. Each of these lists of items was rank-ordered according to the magnitude and sign of the correlation coefficient.
3. The scale size was limited to 20 items (Kline, 1986). The 20 most highly positively correlated items in each BPM category were selected as items for the development of BPM scales.
4. The internal consistency (Cronbach's alpha) for each scale of 20 items was calculated. This resulted in 164 potential scales.
5. The BPM scales were compared on internal consistency. The scales within each BPM category with the highest internal consistency were chosen as the scales to represent each BPM (Morris, 1978). This strategy results in the identification of items within each BPM category which are most central to the item pool, and therefore most representative of each BPM.

Results

Expert rater item selection

Because the inter-rater agreement was lower for BPM4 items, 44 items were included to increase the chances of developing a final scale of sufficient length. Where an abundance of items was available at a particular rater agreement level, items with differing content (Meir & Gati, 1981) were selected. Rater agreement was 100% for BPM2 and BPM3 and greater than 66% for BPM1 and BPM4 (see Table 1).

Table 1

Number of BPM Scale Items Grouped According to Percentage of Expert Rater Agreement (N=6)

	Rater Agreement		
	100%	83%	67%
BPM1	14	26	0
BPM2	40	0	0
BPM3	40	0	0
BPM4	13	19	12

BPM hypotheses

The procedures used in item generation, item selection, and scale development resulted in BPM scales with an internal consistency coefficient (Cronbach's alpha) greater than alpha .88 for the four BPM scales.

After the independent construction of each BPM scale, scales were analysed using the Pearson correlation coefficient to assess the polarity and degree of significance of the relationships between each pair of BPM scales. Correlation coefficients varied between $-.16$ ($p < .05$), between BPM1 and BPM3, and $.88$ ($p < .001$), for the correlation between BPM1 and BPM4 (see Table 2).

Table 2

BPM Inter-scale Correlations (N=192)

	BPM1	BPM2	BPM3	BPM4
BPM1	--	-.65 ***	-.16 *	.88 ***
BPM2		--	.50 ***	-.72 ***
BPM3			--	-.24 ***
BPM4				--

* $p < .05$, one-tailed. *** $p < .001$, one-tailed.

BPM-PBI hypotheses

The second set of hypotheses, consisting of eight predictions relating to associations between the BPM scales and the PBI care scales, were tested using the Pearson correlation coefficient. The significant correlations ranged from $-.35$ ($p < .001$) for BPM1 and paternal care to $.16$ ($p < .05$) for the association between BPM3 and paternal care. (see Table 3). The correlation between BPM3 and maternal care was not significant ($r = .06$, $p > .05$) therefore hypothesis 12 (see Appendix A) was not supported.

Table 3

BPM-PBI (Paternal Care and Maternal Care) Inter-scale Correlations (N=192)

	Paternal care	Maternal care
BPM1	-.35 ***	-.32 ***
BPM2	.34 ***	.32 ***
BPM3	.16 *	.06
BPM4	-.33 ***	-.32 ***

* $p < .05$, one-tailed. *** $p < .001$, one-tailed.

Post hoc exploratory analysis: BPM1 and BPM4 differentiation

Since the correlation between BPM1 and BPM4 was high ($r=.88$, $p<.001$, one-tailed) (see Table 2) an exploratory principle component analysis was conducted to examine whether the BPM1 and BPM4 scales could be differentiated (see Appendix B). The forty BPM1 and forty-four BPM4 potential scales were included in the analysis. The BPM1 and BPM4 scales formed two independent clusters.

Post hoc exploratory analysis: BPM3 and PBI maternal care relations

Since the hypothesis concerning a connection between BPM3 and maternal care was not supported by the data, a post hoc analysis was conducted to examine in more detail the relation between maternal care and the forty possible BPM3 scales. To find the scales that were maximally different the BPM3 inter-scale correlations were examined to identify those with the lowest inter-scale correlations. The scale based on item 7 and the scale based on item 67 had the lowest correlation ($r=0.46$) with each other. The forty BPM3 scale correlation matrix was factor analysed, the scales were distributed over a wide bipolar factor space with some tendency toward a semi-circumplex distribution (see Appendix C). The scale based on item 7 and the scale based on item 67 were widely separated. Item overlap between the two scales would inflate the inter-scale correlation. Items 103 and 157 were contained in both scales. The relationship between the BPM3 scales based on items 7 and 67 and the PBI maternal care scale were then examined (see Table 4).

Table 4

*Correlations Between BPM3 Scales and
PBI Maternal Care Scale (N=192)*

	Maternal care
BPM3 Item 7	-.29 ***
BPM3 Item 67	.20 **

** $p<.01$, two-tailed. *** $p<.001$, two-tailed.

The content of the scale items based on BPM3 item 7 were associated with, for example, enjoying competition, thrill seeking, excitement, ambition, and an urge to be active, whereas the items contained in the scale based on BPM3 item 67 were characterised by, for example, fighting for survival, struggle, desire to be violent, anger, and experiencing mood swings.

Discussion

The first six hypotheses based on the BPM theory were supported by the BPM inter-scale correlations in terms of the level of significance and the predicted directions of the correlations.

Three characteristics of the data relating to the first six hypotheses aided in the validation of Grof's BPM theory. Firstly, rater agreement in categorising the BPM items supported the content validity of the items and the construct validity of Grof's BPM theory. Secondly, the high Cronbach's alpha for the BPM groups suggests that the items within each BPM scale were assessing the same or closely related constructs (Morris, 1978). This intra-scale coherence of BPM items, forming clusters according to the BPM theory, can be seen as evidence for the validity of Grof's BPM theory. Finally, the relationship between one BPM scale and another can be seen as strengthening the support for the construct validity of Grof's BPM theory.

Seven of the eight hypotheses in the second group of predictions associated with the relationship between the BPM and PBI scales were consistent with Grof's theory. However, the hypothesised relationship between BPM3 and the PBI maternal care scale was not supported by the data. An exploratory factor analytic examination of the correlation matrix of the forty BPM3 scales revealed a wide semi-circular, predominantly bi-polar, distribution indicating that the BPM3 construct may consist of at least two relatively distinct domains, (see Appendix C).

This anomaly in the results may be explained by the evolution of Grof's theory. He refers to BPM3 as one of the negative psychological governing systems. For example, he states, "According to the nature of the emotional charge, we can distinguish negative governing systems ... BPM II, BPM III, negative aspects of BPM I, ... from positive governing systems ... BPM IV, positive aspects of BPM I, ..." (Grof, 1985, p. 350). However, more recently Grof and Bennett (1992) presented BPM3 as composed of a wide range of opposite experiences which are potentially positive or negative in their affective charge. In the current study only the simple relationships between the BPMs and the PBI scales were tested. In other words the hypothesis was based on a

unitary view of BPM3. The post hoc analysis confirms Grof's theory that BPM3 consists of at least two relatively distinct, and in some ways possibly opposite, components.

A number of uncontrolled factors may have influenced the results of this study, possibly decreasing the strength of the conclusions. The response rate to the questionnaire was approximately 50 %. The characteristics of participants who did not respond was not known, therefore it is difficult to know whether the results would have been influenced and in which directions. For example, if a lack of interest, motivation and lethargy are associated with BPM2 and if these experiences would hamper a person in completing or returning a questionnaire then the results may show a negative skew for the BPM2 scale. A negative skew on the BPM2 scale indicates a higher frequency of people who do not tend to encounter BPM2 experiences. Interestingly, a negative skew was found on the BPM2 scale. Another possible explanation for the negative skew in the BPM2 results may be related to the nature of the sample studied. The sample was drawn from a non-clinical population, whereas Grof suggests that those individuals who experience predominantly BPM2 qualities are likely to be found in clinical populations (Grof, 1985) in which people are experiencing relatively severe depression. The effect on the results of having a greater number of females, compared with males (78% versus 20%), in the sample is unknown. The similarity of some of the items in the BPM scales may have artificially inflated the Cronbach's alpha statistic. This problem could be minimised by eliminating or replacing items.

Inter-rater agreement was relatively low for BPM4 in comparison with the other BPM groups. This could be explained by the possible nature of the relationships between individual perinatal matrix items. The BPM theory may have divided perinatal matrix experiences (reflected by individual item content) into categories that are too wide, so that the range of constructs are not highly differentiated. In other words, the perinatal matrix experiences may take the form of a continuum, rather than discrete categories. Another possibility is that some perinatal matrix experiences may be common to more than one BPM category.

This quantitative study overcame some of the methodological limitations of the qualitative methods that were used in developing the BPM theory. This may aid theory validation and clinical practice in a number of ways. Firstly, the study confirms the validity of the BPM constructs using a different methodology (Kazdin, 1992) than that

used by Grof. Secondly, the development of a questionnaire allows efficient follow up after therapy or in longitudinal research. Thirdly, the objective nature of the response to scale items can contribute to clinical assessment by supplementing interviews, oral reports, or direct observation of individuals. Fourthly, it provides a basis for identifying central elements (items/concepts) for each BPM. Fifthly, since the BPM questionnaire is objectively scored, therapist or researcher reflexivity during assessment is minimised. Sixthly, the questionnaire may allow easy access to further research into the BPM theory and quantitative assessment of the clinical usefulness of the BPM concepts.

This BPM research enabled the quantification of subjective states via a self-report questionnaire. The research lends support to the idea that a conceptual network of subjective experiences may be relevant as a theoretical structure to the understanding of relationships between other person variables such as the retrospective memory of parental care.

If, as it appears, the PBI is a valid instrument in terms of retrospective memory of childhood experiences of parental care (Parker, 1983), then this BPM research may have implications for developmental psychology, child psychotherapy, education and parenting. In other words, if the experience of feeling cared for, or awareness of being cared for, in childhood is accurately represented by the PBI, and there is an association between the PBI responses and BPM experiences, then influencing the level of care experienced in childhood could lead to different BPM experiences in adulthood.

The BPM theory appears to be relatively robust in relation to several variables. The results replicate Grof's findings in terms of the clustering of BPM experiences, the inter-relationships between groupings of BPM experiences, and the relationship between BPM experiences and recollections of parental care. This occurred through the use of a different methodology (Kadzin, 1992), in a different context, and with a different sample profile (ie., Grof's samples were drawn from clinical and non-clinical populations, and this study used a non-clinical sample).

While this study shows that associations exist between the investigated variables, the causal factors still need to be explored. Factors that may contribute to BPM experiences in adulthood might include birth traumas (Grof, 1985), particular childhood experiences (Grof, 1985), chronic childhood experiences (Winnicott, 1965), genetics (Rowe, 1994), and adult life experiences. This study provides further evidence that there

is a connection between the recollected experiences of parental care and the BPMs. However, there is disagreement as to the relative contribution of the effect of birth, genetics, adult life experience, and experiences of parental care on the development of a persons' experiences in adulthood (Rowe, 1994). While the aim of this project was not to investigate the relative contributions of each factor, the correlation between BPM and the PBI is consistent with the theory of development that sees relational characteristics in childhood as affecting adult experiences, and is not inconsistent with the possibilities that genetic or other factors may be influential. On the other hand Parker's (1983) research indicates that the PBI may be tapping into non-genetic factors (ie., parental care factors). In conjunction with the present study this may mean that early environmental conditions have some influence on the type of BPM experiences that occur in adulthood.

This research has provided some of the basic groundwork needed for the development of a valid measure (Foster & Cone, 1995) however many areas remain untouched. Future research could extend and strengthen the current findings in a number of ways. Replication of the study (Kadzin, 1992) with a larger sample would strengthen the conclusions concerning the clustering of the BPM items, the BPM scale inter-relationships, and the relationship between BPM scales and PBI scales. Convergent and discriminant validity (Kadzin, 1992) could be assessed by correlating different BPM scales with various measures. For example, if BPM2 is positively related to depression one would expect a correlation between the BPM2 scale and the Beck Depression Inventory (Beck, 1978), thus testing convergent validity. Discriminative validity could be assessed by submitting the questionnaire to two groups of people that differ, as assessed by another method such as interviews, on characteristics related to one of the BPMs. The BPM scores could then be compared with the categorisation by the interviewers to examine the degree to which the measure discriminates between groups. Further research into the apparent subgroups or spectrum of BPM3 characteristics would allow clearer understanding of the nature of BPM3 experiences, their relationship to other BPMs and other measures. Examining the relationship between measures of affectivity using one of the dimensional models (eg., Mahoney, 1991; Plutchik, 1991; Russell, 1980) may provide a basis for the examination of convergent validity for the BPM questionnaire since many of the BPM and affective theory concepts appear to be similar.

Retesting participants at different time intervals may provide information on a number of important factors related to assessment. Firstly, it would allow some estimate of the stability of BPM experiences. Secondly, if a wide range of background and demographic variables was collected using a longitudinal design it may be possible to discover factors that affect the initial development of BPM experiences and the relative contribution of different variables to the development of BPM experiences. Thirdly, through manipulating variables within individuals' lives such as by the introduction of relaxation therapy, cognitive therapy or experiential therapy, it may be possible to discover the factors influential in alternations from one BPM group of experiences to another and the relative contribution of different variables to the alteration of particular BPM experiences.

Further research into the above issues may have implications for clinical practice, and may draw attention to the importance of subjective experience in psychotherapy. The BPM theory and questionnaire could be used prior to therapy to give clinicians clues as to the issues that clients are likely to encounter. Awareness of, measurement of, and attention to the subjective experiences that a person is living through, (for example monitoring the range, type and direction of BPM experiences), may aid in more effective therapy. This could mean that the BPM theory and questionnaire could be used as psycho-educative tools or conceptual structures with which to view experiences. Another possibility, with further research and validation, would be the assessment of therapy outcome, for example, comparison of BPM scores for each scale before and after therapy.

The present findings largely confirm the subjective experience component of Grof's BPM theory, with the possible exception of the BPM3 construct which requires further exploratory analysis in future research. The study adds a quantitative component to the BPM research by supporting the validity of the BPM theory via the BPM and BPM-PBI inter-scale relationships. With further validation and detailed item analysis the BPM questionnaire could be developed into a supplementary tool in clinical practice and research where the BPM theoretical model is used.

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Appendix A

BPM and BPM-PBI Hypotheses

BPM Hypotheses

1. The BPM1 scale and BPM4 scale will be positively correlated.
2. The BPM2 scale and BPM3 scale will be positively correlated.
3. The BPM1 scale and BPM2 scale will be negatively correlated.
4. The BPM1 scale and BPM3 scale will be negatively correlated.
5. The BPM2 scale and BPM4 scale will be negatively correlated.
6. The BPM4 scale and BPM3 scale will be negatively correlated.

BPM-PBI Hypotheses

7. The BPM1 scale will correlate negatively with scores on the PBI maternal care scale.
8. The BPM4 scale will correlate negatively with scores on the PBI maternal care scale.
9. The BPM1 scale will correlate negatively with scores on the PBI paternal care scale.
10. The BPM4 scale will correlate negatively with scores on the PBI paternal care scale.
11. The BPM2 scale will correlate positively with scores on the PBI maternal care scale.
12. The BPM3 scale will correlate positively with scores on the PBI maternal care scale.
13. The BPM2 scale will correlate positively with scores on the PBI paternal care scale.
14. The BPM3 scale will correlate positively with scores on the PBI paternal care scale.

Appendix B

Principle Component Analysis of BPM1 and BPM4 Scales

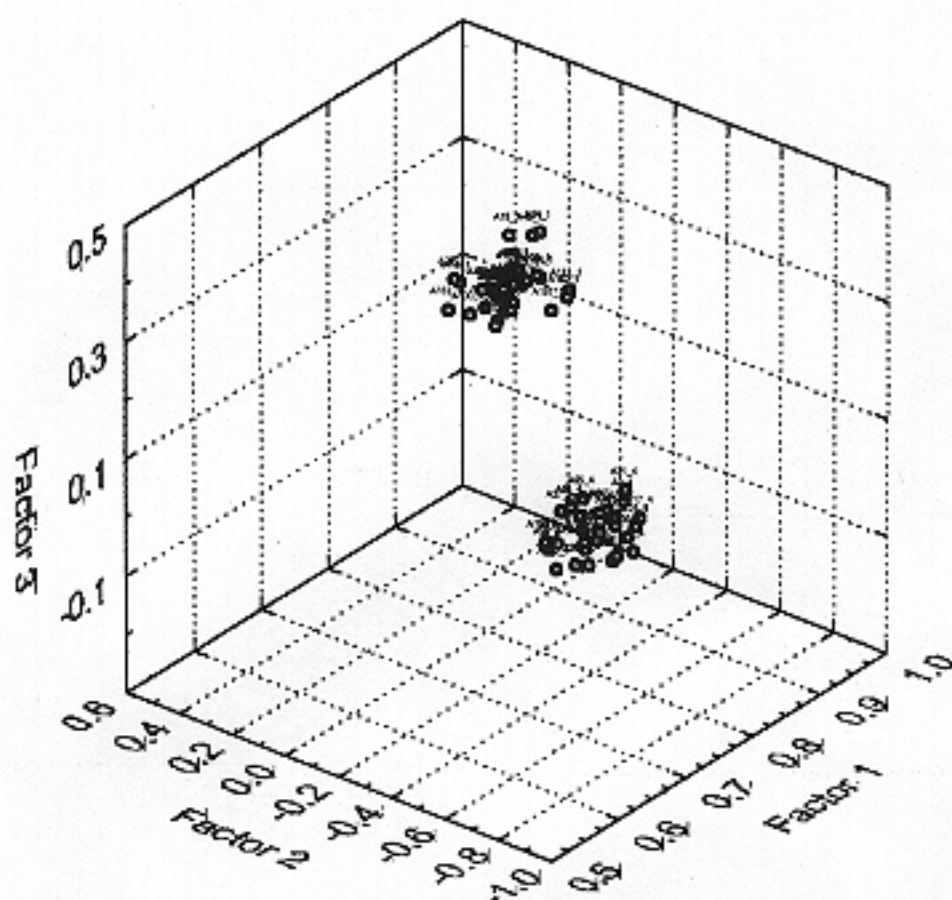


Figure 1
Principal component analysis of BPM1 and BPM4, manual rotation.
BPM1 scales are represented by the upper group of points.
BPM4 scales are represented by the lower group of points.

Appendix C

Factor Analysis of BPM3 Scales Correlation Matrix

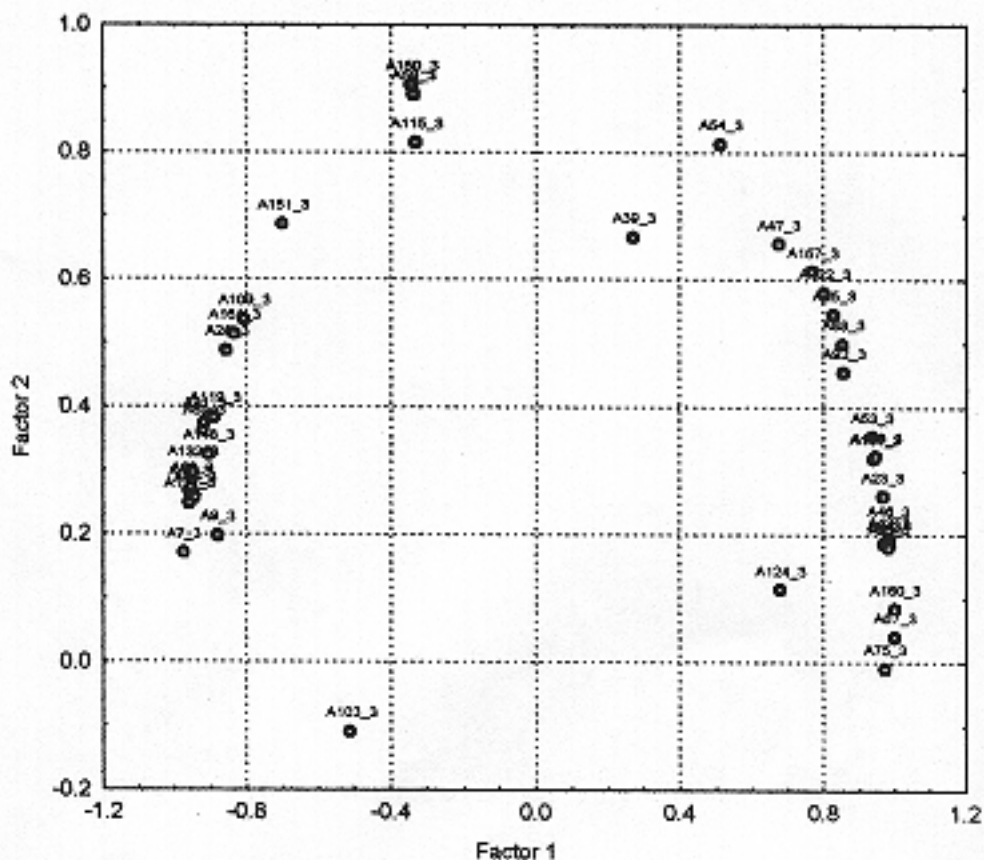


Figure 2.
Unrotated factor analysis of BPM3 scales correlation matrix.

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