THE PARENTAL BONDING INSTRUMENT

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The following is an ANNOTATED BIBLIOGRAPHY of PBI research. It contains a review and summary of studies using the PBI from 1979 – 1998. This article is a draft of a working document in progress, and has been made available to members of the research community interested in PBI research.

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DEFINING THE PBI SCALES

In the original PBI development report[1], it was argued that, as factor analytic studies of parental characteristics had consistently generated a first factor of 'affection and warmth' contrasted with coldness and rejection', and generally a second factor of 'psychological autonomy' contrasted with 'psychological control', then the parental contribution to parent-child bonding was likely to be most influenced by those two "principal" (or fundamental) source variables. Such research findings were compatible with broader psychological research,[2,3] suggesting that all interpersonal behaviour, be it adaptive or maladaptive, be it parent-child, teacher-pupil, or intimate-intimate, had two key underlying dimensions of 'affection-hostility' and 'dominance-submission'.

PBI items were sought that best defined and refined those two parental dimensions by factor analytic strategies. The PBI was then designed as a self-report measure to be completed by those who were at least 16 years of age, scoring their parents on 25 attitudinal and behavioural items (each with a four-point scale) as remembered during the first 16 years of the respondent's development. Factor analyses in two non-clinical groups isolated a clear care dimension as the first factor. A second and third factor suggested overprotection, and the encouragement of independence and autonomy respectively. As the negative poles of each of those two factors tended to have items weighting positively on the other factor, it was judged that one was largely the obverse of the other. For that reason, and also to have a more limited set of dimensions, a two-factor solution (accounting for 28% and 17% of the variance) and a varimax rotation were imposed, the latter strategy seeking to generate items most relevant to one dimension and independent of the other. As the initial and subsequent studies by Parker have consistently shown a negative correlation between actual scores on the initially-labelled 'care' and 'overprotection' scales (in the order of -0.40), it is clear that the final scales measure interdependent dimensions (apart from a back-translated Italian version, whether the authors[85] state that they obtained correlations of -.16 for mothers and .08 for fathers), despite the objective of independence or orthogonality, with overprotection being associated with a lack of care. This last issue is perhaps perplexing when overprotection is equated with high care by some theorists. Nevertheless, our experience encourages us to the view that overprotection (involving control and intrusion) may frequently supplant or disallow care, explaining the association between scores on the two scales. Despite this general link, use of the PBI (via the quadrants that will be shortly described, allows the relevance of both 'caring' and 'uncaring' overprotection to be examined).

Several studies have re-examined the factorial structure of the PBI. Mackinnon et al[4] undertook a community survey of 386 subjects selected from the Canberra (Australia) electoral roll, seeking to attempt to replicate the original structure in a general population. The authors reported that nearly all factor loadings were higher than those reported in the development study.[1] Cubis[5] surveyed 23 schools in the lower Hunter Region of New South Wales (Australia) and had 2147 adolescents (almost equal numbers of males and females) complete two PBI forms for the "male" and "female" most responsible for them over the five preceding years. The natural mother was nominated by more than 90% of the sample and the natural father by more than 80%. The researchers undertook a series of analyses of the PBI items, using principal components analyses with inspection of the oblique rotation. They judged that a three-factor solution (accounting for 36%-45% of the variance across the various analyses) was superior, because of consistency and interpretability. All 12 of the PBI care items had the highest loading on the first factor which the authors labelled 'care'. The authors' second and third factors were viewed as sub-factors of the PBI-protection scale and were labelled 'Protection-Social Domain' (reflecting the extent to which freedom was judged as restricted) and 'Protection-Personal Domain' (reflecting the extent to which a respondent felt dominated and treated as a child). Scores on the two derived 'protection' scales were linked (0.59 and 0.47 for male and female-parent figures) and negatively associated with 'care' scale scores (range -0.41 to -0.56). Mean scores were reasonably close to published Australian adult data[6], although the authors noted a trend for the adolescents to score parents as less caring and more controlling. The importance of this study, in addition to obtaining data from a large, representative general adolescent sample, lies in confirmation of the care factor and the suggestion of two meaningful PBI protection sub-scales. The extent to which those two derived sub-scales have general relevance or are specific to adolescents assessing parenting over the preceding five years (the study's strategy) requires examination in an adult sample.

In a Canadian study, Kazarian[7] re-examined the factorial structure in a sample of 49 schizophrenic patients attending an out-patients clinic. The data were analysed by the principal components method (again with orthogonal varimax rotation). The first two components accounted for 40% of the total variance for fathers and 47% for mothers, and a scree test suggested that only two components be retained. The authors commented that their results were highly consistent with those from the original development study, with coefficients of congruence for items in the two studies ranging from 0.91 to 0.99. Additionally, they noted that the isolated dimensions appeared similar for both parents, with coefficients of congruence for the care and protection scales being 0.93 for mothers and 0.94 for fathers. The authors concluded that their findings lent further support to the internal structure of the PBI.

In contrast to studies of the English version of the PBI, Arrindell and colleagues[8] sought to establish whether the PBI factors had relevance in a non-English speaking group. They translated the PBI into Dutch (undertaking back translations and pre-testing) and then administered it to four groups (two student samples, a community sample, and a group of phobic outpatients). To examine for factor constancy, varimax-rotated matrices of factor loadings obtained for each of their four samples were compared with the original developmental solution[1] using a technique of factorial invariance or Procrustean analysis. The coefficients of congruence (10 comparison groups and 4 scales = 40 comparisons) ranged from 0.85 to 0.99, with 38 of the coefficients exceeding 0.90, establishing replicability of the PBI factors across culture and across the differing Dutch sub-samples. Males and females did not differ in the definition of PBI constructs (ie scales) with congruence coefficients ranging from 0.93 to 0.99, while comparisons of 'younger' and 'older' subjects (age cut-off of 30 years) failed to demonstrate any age effect (with congruence coefficients ranging from 0.94 to 0.99). The Dutch study factors explained 41-44% of the total variance in the maternal data (compared to an estimated 45% in the original Australian data) and 41-42% of the paternal data (cf to 44%).

The factorial validity of the scales is supported further by independent demonstration of a two-factor model of parenting, both in many studies preceding the development of the PBI (see[1]) and subsequently by development of the EMBU by Swedish researchers. Initially, the EMBU comprised 14 a priori aspects of parental rearing, which were reduced to four dimensions by factor analytic studies, but subsequent factor analyses of cross-national data encouraged the researchers[9] to propose a two-factor model of parental rearing behaviour, labelled 'care' and 'protection' by them.

Shortened Forms of the PBI:

Shortened versions of the PBI have been produced, to reduce demand on research participants from non-clinical populations being required to complete large questionnaire packages. While the aim is to preserve the factor structure and psychometric properties of the original form, the short versions are not intended to replace it, in clinical populations.

(i) A seven item version (three care and four protection items) was produced as part of a questionnaire booklet, which also contained short forms of the Intimate Bond Measure (IBM) and the Interpersonal Sensitivity Measure (IPSM), and mailed to 2000 pairs of 18-26 year old twins.[135] As part of this study, the shortened versions of the scales were

examined to see if they were valid measures of the underlying constructs captured by the full length instruments. This was done by comparing with full length versions sent to a subset (of male/female, monozygotic/dizygotic, with 51 males and 70 females responding) twelve months later (1991).

(ii) The PBI-BC is a modified form of the PBI, designed to focus on current relationships (last three months), to take into account the influence of current factors (such as immigration and refugee status) that may modify parent attitudes and behaviours. It was developed in the context of a study[129,130] based on 631 Australian-background, immigrant and refugee adolescents (mean age 17.2 ±.99). The PBI-BC consists of eight modified items from the PBI and "closely replicates the factor structure of the original instrument and has good internal reliability".

SOCIODEMIOGRAPHIC INFLUENCES ON PBI SCALE SCORES

Sex of parent: In the original development study[1], subjects scored their mother as more caring and as somewhat more protective, a finding replicated in Oxford (UK),[6] Vermont (USA)[6] and Canadian[10] general practice studies. A more extended analysis was undertaken in the Canberra general population study,[4] in that while mean scores suggested mothers were distinctly more caring and somewhat more protective than fathers, when the sex of the respondent was taken into account, the only significant difference was that women reported their fathers as significantly more caring than did men. In the community study of adolescents,[5] mothers were rated as distinctly more caring, and as significantly more intrusive and controlling than fathers.

Short form PBI:

Consistent with studies using the 25-item PBI, comparison of parents on the two measures of the PBI-BC in a sample of 631 adolescents established mothers as more caring ($t(584) = 12.76$, $p=0.000$) than fathers (mean ±SD 2.01 ±1.89 and .72 ±2.22).[129] However, mothers rated significantly lower than fathers ($t(584) = 2.90$, $p=0.000$) on control/autonomy difference scores (mean ±SD 1.38 ±1.94 and -1.12 ±2.04).

Sex of respondent: Neither the Sydney,[6] Oxford[6] or Canadian[10] general practice studies, nor the Dutch study[8] of four clinical and non-clinical sub-groups established any influence of the sex of the respondent on PBI scale scores, so that the Canberra finding (noted above) remains to be confirmed. In the community study of adolescents,[5] males

and females returned similar paternal PBI care scale scores, but females rated mothers as more caring than males. On their 'social domain' sub-scale of the protection dimension, males and females scored fathers similarly, but mothers were judged as less restrictive by daughters than by sons, while males found fathers less 'intrusive' than did females on that sub-scale, while, for aggregated 'protection' scale scores, sex differences were not evident. An American study[120] of 75 second year medical students has found some sex differences in perceived parenting style with females reporting significantly less maternal overprotection than males. A study of university students[117] found males who obtained a lower score on the MMPI masculinity-femininity (Mf) scale reported significantly higher levels of paternal care (r=-.28). A gender difference was found in a study[127] of first year medical students, where females reported higher paternal overprotection scores than did males, on two occasions, whereas there were no differences between the sexes on the other PBI measures.

Short form PBI:

The greater relevance of paternal control, (using the PBI-BC) in a study[129,130] based on 631 adolescents, was due largely to the greater proportion of females (n=414). Arithmetic difference scores showed females tended to rate their fathers higher ($t(588) = 2.41$, $p=0.016$) on control/autonomy (mean $\pm$ SD, -0.99 $\pm$2.07, n=389) than did males (-1.42 $\pm$1.95, n=201).[129]

Social class: The influence of social class (assessed by rating paternal occupation) was assessed in multivariate analyses of the Sydney and Oxford general practice data sets,[6] showing no effect in the former and a significant effect only for higher maternal care being associated with higher social class in the latter, when analysed together with age and sex of respondent data. In the Canberra general population study,[4] no relationship was established between PBI scale scores and the highest level of education attained by the respondents.

Cultural Influences: The finding[11] that Greek girls (resident in Sydney) scored both their mothers and fathers as distinctly more overprotective (68% and 67% respectively) than a control group of Australian girls, suggests sensitivity to cultural nuances of parenting.

Short form PBI:

The greater relevance of paternal control in the study[129,130] based on 631 adolescents using the PBI-BC, may have been due, in part, to the status of fathers in specific cultures. Subjects consisted of 253 Australian born, with at least one Australian

born parent; 171 were Australian born, with both parents born overseas; 116 were immigrants (of whom 99 were born in non-English speaking countries); and 91 were refugees from Vietnam.

Rey, Bird, Kopec-Schrader & Richards (1993 Draft)[147] conducted a study which looked at whether perceived parental care and protection varied as a function of adolescents' age and sex, as well as psychiatric diagnosis. They gave the PBI to three different adolescent cohorts: (1) a non-referred /control group (2) a referred/clinical group (without diagnosis), and (3) a referred/clincal group (diagnosed). Significant differences in parental care and protection scores were found as a function of age, sex, clinical status and nature of diagnosis.

Older subjects perceived both their mother and father as less caring than younger subjects, however they did not view their parents as more controlling. Female subjects perceived fathers as more over-protective than male subjects did, but this was not the case for mothers. Significant differences were noted in both the ratings of care and control when the two clinical groups were compared to the normal group. Together, the two clinical groups rated parental care lower overall as compared to the normal group. They also rated parental protection significantly higher than did normals. Subjects diagnosed with emotional disorder rated their mothers as significantly more caring and less controlling than those subjects with disruptive, adjustment or other disorders.

The authors argued that their findings support the notion that PBI scores might reflect a non-specific vulnerability or risk factor across psychiatric disorders in the adolescent age group.

SCORING ISSUES

In the original paper[1] it was suggested that the measure could be used in several broad ways, calculating and examining raw care and overprotection scores for parents and, secondly, contrasting broad parental styles of 'optimal bonding' (high care-low overprotection), 'affectionless control' (low care-high overprotection), 'affectionate constraint' (high care-high overprotection), and 'absent or weak bonding' (low care-low overprotection). Normative data from the Sydney general practice study have been used in a number of studies to determine cut-off scores for high and low 'care' and 'protection'. Based on those means, suggested cut-off care and protection scores are 27.0 and 13.5 for mothers; and 24.0 and 12.5 for fathers.[6] The "overprotection" scale was subsequently[6] relabelled "protection", although it might well have been labelled "control", the 'optimal bonding'

quadrant was relabelled 'optimal parenting' and 'the absent or weak bonding' quadrant was relabelled 'neglectful parenting'.

In wording PBI items, a number were framed 'negatively' (eg some care items worded in the uncaring direction) in an attempt to detect aberrant responders. Thus, any form with consistent ticking of a particular column immediately suggests an invalid response. Subsequent use of the PBI has suggested that some patients interpret those items ambiguously. The effect of deleting the five relevant items was examined[6] and, while reliability was not diminished, validity coefficients were somewhat weakened. Gamsa[12] suggested an alternate strategy of reconstructing the five items as positive statements. She then had a group of students complete the original PBI and, five months later, her modified PBI. Agreement between pooled scores for the two measures was high (coefficients of 0.76 to 0.84), and mean scores were strikingly similar. The last finding might seem paradoxical, in suggesting that there is no need to modify the PBI, but Gamsa noted that there were 14 requests for assistance in completing the original, and no requests for the modified PBI form. The modification therefore has the potential to reduce confusion experienced by some respondents.

Gerlsma, Arrindell and Emmelkamp [119(139)] had 56 subjects (20 male and 36 female) rate each item of the PBI for its connotative meaning on a three-point scale: negative, positive and neutral. Inter-rater agreement was high (all > .90). On both the care and protection scale, half the items were rated as having a clear positive connotation and the other half as having a clear negative connotation. Both the PBI Protection and care scales were unambiguous in connotation. Further, younger subjects were significantly more likely to rate PBI items as having a negative connotation. Also, female subjects were more likely to rate overprotection items as positive than male subjects. The authors suggest that questionnaire items with a clearly positive or negative connotation are more likely to be influenced by current mood state than items with a neutral connotation. Thus, this bias needs to be taken into account when interpreting research findings.

RELIABILITY STUDIES

(a) **Internal consistency**: In the original paper[1], split-half reliability was 0.88 for the care scale and 0.74 for the protection scale in the non-clinical sample. In an American study[13] of 153 medical students, the following high coefficient alphas were established: maternal care = 0.91, paternal care = 0.93, maternal protection = 0.88, paternal protection = 0.87. In another American study[107] of

university students, coefficient alphas for maternal and paternal PBI subscale scores ranged from 0.80 to 0.93 for female students (n=49) and from 0.84 to 0.89 for male students (n=46). In a study[120] of 75 second year medical students coefficient alpha scores for mothers and fathers, respectively, were 0.85 and 0.90 for the Care subscale and 0.87 and 0.86 for the protection subscale. In a study[109] of 56 undergraduate students cronbach alphas of 0.90 for PBI care scale 0.90 and of 0.89 for the PBI overprotection scale 0.89 were reported. Another study[120] of 150 undergraduate students coefficient alpha was 0.93 for PBI care scale and 0.89 for the PBI overprotection scale. In the Canberra general population study,[4] internal consistency with coefficients for maternal and paternal PBI scale scores ranged from 0.87 to 0.94 at initial testing, and 0.89 to 0.95 at retest, suggesting strongly homogenous 'care' and 'protection' constructs. In a study[126] examining family disharmony and parental depression as risk factors for psychopathology in offspring, the PBI was completed by 153 offspring from 65 families with at least one depressed parent and 67 offspring from 26 families with nondepressed parents. The following Chronbach's alphas were generated for internal consistency reliability: maternal care, .77; maternal overprotection, .83; paternal care, .83; paternal overprotection, .86. In the Dutch study,[8] alpha coefficients across the samples ranged from 0.89 to 0.91 (parental care) and from 0.83 to 0.88 (parental overprotection) suggesting homogeneity, more marked for the care scale. In a study[133] of 58 Jewish women (adult daughters of Holocaust survivors, pre-war immigrants and non-immigrants), examining for effect of the Holocaust on quality of engagement between surviving females and their daughters, internal reliability co-efficients for PBI (care and protection subscales), for mothers, were .91 and .92, respectively.

Short form PBI:

In the twin study,[135] Chronbach's alphas for the seven-item scale on 1990 scores (ranged from 0.73-0.79), the seven-item subset of the 1991 full length PBI (0.79-0.87), which were reasonable, although lower than for the 1991 full length instrument (0.91-0.95). For the eight-item PBI-BC,[129] correlations between arithmetic difference scores for the bi-polar dimensions (sum of care items minus sum of rejection items, and control minus autonomy items) and their corresponding factor scores, for both parents, ranged from .920 (p=.000) to .928 (p=.000), 'suggesting that arithmetic difference scores are a fair estimate of the factor scores' of the PBI-BC.

(b) **Test-retest reliability**: In the original non-clinical sample[1] the test-reliability agreement was 0.76 for the care scale and 0.63 for the protection scale, over a three-week interval. Subsequently, in a sample of depressives,[14] initially depressed and then significantly improved, higher correlation coefficients were established, ranging from 0.87 to 0.92, which was interpreted as reflecting the greater motivation of patients (in comparison to volunteer or importuned non-clinical groups) to return questionnaire data conscientiously. In a U.S. study[15] of depressed out-patients attending the Yale Depression research Unit, 48 depressives scored the orthodox PBI forms at baseline assessment and some 4-6 weeks later when significantly improved. Scores on all four PBI scales were strikingly similar (and showed no significant change), with the coefficients of agreement ranging from 0.90 to 0.96 across the four scales, very similar to the Australian depressive sample. In another study [121] 96 undergraduate students who reported varying degrees of depressive symptoms (as measured by the Beck Depression Inventory - BDI - ranging from minimal to severe) completed the PBI on two occasions three months apart. Reliability estimates of 0.86 for the PBI care scale and 0.85 for the PBI overprotection scale were reported. Further, reliability estimates for a subgroup of subjects who had become more or less depressed (+/- 8 points on the BDI) across the three months were 0.83 fr the PBI care scale and 0.96 for the PBI overprotection scale. In a study[142(139)] testing for mood effects on memories of parenting, correlations between PBI scales at T1 and T2 (six months later) were 0.78 to 0.85, for the whole sample (n=315). For an 'anxious/depressed' subgroup (n=20) who were asymptomatic on one occasion, r=.66 to .80, and for the 205 asymptomatic controls, r=.77 to .85.

Test-retest reliability in a group of schizophrenic patients was examined[16] by comparing PBI scores returned shortly after admission and after clinically-judged improvement, with the coefficients of agreement ranging from 0.58 to 0.77 (mean 0.69). Additionally, Warner and Atkinson[17] had 26 schizophrenic subjects complete orthodox PBI forms on two occasions a few weeks' apart, with correlation coefficients ranging from 0.79 to 0.88. The higher level of agreement in the latter study is likely to reflect their community mental health centre sample being tested while their condition was relatively stable, therefore reducing possible biases introduced by exacerbation of schizophrenic illness on completion of any self-report measure.

Medium-term test-retest reliability data have been provided in an American study.[18,127] The correlation coefficients were 0.79 and 0.81 for maternal and paternal care, and 0.80 for both maternal and paternal protection in a sample of medical students tested seven months apart. There were significant trends, however, for the sample to rate both parents as less caring and as more protective at the follow-up assessment. In a test-retest study[132] to evaluate a test to discriminate between state and trait measures, a sample of 443 men and women of the general population, completed the PBI on two occasions, six months apart. The sample produced test-retest co-efficients for maternal care (.79), paternal care (.85), maternal protection (.83)and paternal protection (.80).

Stability of the PBI has now been tested in a community sample[4] by having a Canberra community sample of 386 subjects first complete the PBI at an initial interview. The sample was then divided randomly into four groups with sub-samples retested at 4,11,21 and 34 weeks, with 369 complying. LISREL was used to test the equality of the test-retest correlations. Test-retest coefficients (over the varying intervals) ranged from 0.89 to 0.94 for parental care and 0.74 to 0.89 for parental overprotection, with no general pattern for correlations to change as a function of the interwave interval. The authors concluded that the "PBI has excellent psychometric properties including stability, when used in a prospective community study".

Longer term test-retest reliability are now available. Gotlib[19] studied women in the post-partum period and then 2-4 years (mean 30 months) later, and the authors noted that perceptions of maternal care and overprotectiveness (only the maternal PBI form being used) were "remarkably stable over time". Secondly, 10-year data from a cohort study of young teachers[20] are impressive with mean scores being relatively constant and correlation coefficients moderate to high: maternal care (26.3 vs 26.3, r=0.63), maternal protection (14.8 vs 13.8, r=0.68), paternal care (21.9 vs 21.4, r=0.72), and paternal protection (13.0 vs 11.9, r=0.56).

Short form PBI:

In the twin study,[135] correlations between the seven-item PBI administered in 1990 and the seven-item subset of the 1991 full length PBI, one year later, ranged from 0.55 to 0.66. Maternal care was the lowest, due to low stability (r=0.05) for males on the care dimension. Otherwise, there were no differences between males and females. Correlations between the short 1990 version and the 1991 full length scales ranged from 0.61 to 0.70. Whilst co-efficients obtained were not high, they do compare favourably with those obtained in other long-term studies.

VALIDITY

Validity of any self-report measure is difficult to establish, particularly when the subjective, phenomenological world of the individual may not approximate to any actual 'reality'. Thus, it is necessary for a measure such as the PBI to have its validity assessed in reference to both "perceived" and "actual" parenting, although our own bias has been to focus on perceived parenting, believing that what the child perceives is most likely to have the greater influence than the "actual" parental contribution, if dissonance between 'perceived' and 'actual' is conceded. Beck[21] quoted Alfred Adler in this context - "We are self-determined by the meaning we give to experiences...Meanings are not determined by situations, but we determine ourselves by the meanings we give to situations." Alternatively, "studies into the validity of meaning of recalled parent behaviour have for the major part been aimed to prove that memories are more than perceptions".[140(139)]

A second major problem is that the PBI assesses parenting over an extended period of 16 years and the extent to which different phases in childhood and adolescence induce variations in parental attitudes and behaviours must be conceded. In the original paper, we made an assumption that the "scales reflect a moment, or product of innumerable specific experiences over time", in that we presumed that, while overprotective parents (for instance) might manifest quite specific and different overprotective behaviours during differing phases of their child's development, they maintain a general pattern of overprotectiveness. That assumption has not, as yet, been empirically tested.

(a) Perceived parenting validity studies.

In the original paper[1], a semi-structured interview of a non-clinical group assessed the extent to which members described their parents as caring or overprotective, and when such ratings by two independent raters were intercorrelated with PBI scores, the level of agreement about parental care exceeded 0.77 and, for overprotection, 0.47 in the several examinations.

Sarason[22] had a sample of psychology students score their parents on the PBI and complete a number of self-report measures of social support. Scores on the Social Support Questionnaire or SSQ (measuring number of perceived available supports, number of perceived available family supports and satisfaction with perceived available support, and therefore extending beyond consideration of parents only) correlated 0.43 to 0.63 with maternal care, 0.40 to 0.48 with paternal care, -0.21 to -0.32 with maternal protection and -0.17 to -0.26 with paternal protection. In addition to intercorrelating PBI scores with other

self-report measures, the researchers compared PBI scores with scores on the ISSI, a 52-item structured interview[23] assessing perceived availability and adequacy of both attachment and social integration. PBI maternal care was most clearly linked with ISSI 'availability of attachment' (r =0.38) and 'availability of social integration' (r=0.41), while PBI paternal care showed similar links (of 0.38 and 0.33 respectively). ISSI 'availability of social integration' was negatively associated with maternal (r=-0.35) and paternal (r=-0.51) protection. While it can be put that this study supports the concurrent validity of the PBI as a measure of perceived parenting (despite the comparison measure rating parents and others), such results could also be expected on the basis of a general response bias influencing perception and/or rating of all interpersonal relationships and the social network. The second issue will be considered shortly.

Birtchnell (1988) (74) had depressives and controls (further details in the 'clinical depression' section) report at interview on their early relationships with their parents, and the 'recall' allocations ('predominantly good', 'mixed', 'predominantly bad') corresponded with formal PBI scores, in that the depressives reported less maternal care and greater maternal protection, but such trends were not significant for fathers. Such findings corresponded with the depressives being significantly more likely to report 'mixed' and 'predominantly bad' relations with their mothers but not with their fathers.

(b) Actual parenting validity studies.

Several study designs have been used to address this aspect. Firstly, a mixed sample of clinical and non-clinical subjects, as well as nominated siblings, completed PBI forms for themselves and as they had "observed" their parents' attitudes and behaviours to others[6,14]. If subjects' PBI scores are valid reflections of actual parenting, correspondence would be expected between subjects' PBI's and their siblings' corroborative reports. The mean coefficient of agreement was 0.62 for PBI care and 0.47 for PBI protection.

Secondly, a group of 78 monozygotic (MZ) and dizygotic (DZ) twins was selected,[24] with twins being requested to score their parents in the orthodox way with the logic being that, if the PBI is a valid measure, PBI scores for the MZ twins should be highly correlated, both because of presumed similarities in parenting and of genetic influences promoting similar attributional styles in perceiving and/or reporting characteristics of their parents. Weaker associations returned by DZ twins might indicate the extent to which any greater variability in parenting experienced by DZ twins and/or genetic influences on attributional style and reporting might be operative. The mean correlation coefficients for the PBI scales were, in fact, strikingly similar for the two groups, being 0.70 for the MZ and 0.71 for the DZ

twin pairs, both exceeding the mean correlation coefficient of 0.43 established earlier (Parker, 1983b) for siblings scoring parents. These findings, while supportive of the validity of the PBI, nevertheless failed to show the anticipated differential between MZ and DZ data. A more comprehensive study of 672 twins has now been completed by Mackinnon and colleauges[25] using the Australian NH & MRC Twin Registry, and demonstrating weaker associations for DZ twins. In that study, agreement in PBI scale scores was generally high between female cotwins, with the mean correlation coefficient being somewhat higher for MZ (r = 0.69) than for DZ (r = 0.56), and with the authors noting that a "shared environmental model fitted all scales" except maternal care. Agreement between male twins (mean for MZ = 0.56, DZ = 0.10) was lower, and the authors speculated that the extremely low level of agreement between DZ cotwins might reflect competition between twins or comparisons made by the respondent with the cotwin. As noted by the authors, results for females "are encouraging as a demonstration that three of the scales relate to actual parental behaviour". The lack of agreement between male DZ cotwins is puzzling, in that agreement levels were lower than reported for siblings. While the authors note other work suggesting that low concordance in DZ ratings is not unexpected, the nature of their lack of agreement in PBI ratings remains to be clarified. As male DZ twins are often the most difficult sub-group to enrol in twin studies, it is possible that results could reflect the male DZ twins enrolled being less motivated to complete the PBI scales accurately. If the dissonance does not reflect actual parenting style differences between cotwins, then the validity of the PBI as a measure of actual parenting is compromised.

Thirdly, a non-clinical group of subjects scored themselves on state and trait depression measures, and their mothers on the PBI.[6,14] The mothers were then requested to score themselves on the PBI (ie as they judged they had related to that child in his/her first 16 years). While the mothers scored themselves as more caring and less protective than did the subjects, there were moderate levels of agreement between subjects and their mothers (0.44 for care and 0.55 for protection). When PBI scores were intercorrelated with subjects' depression scores, higher depression was negatively associated with maternal care and positively with maternal protection, whether judged by the subjects or by their mothers, and the respective correlations were strikingly similar in strength. Thus, for the more depressed, both those subjects and their mothers judged maternal care as less and maternal protection as increased.

Fourthly, in that same non-clinical group,[6,26] mothers who were judged as most overprotective on the PBI were assessed at interview (and many years after the relevant period of parenting). The interviewer, who was blind to PBI scores, discriminated PBI-

determined overprotective mothers from the remainder as significantly more overprotective, controlling, infantilizing, dependency-inducing and indulging at interview.

Parker et al[86] studied a sample of schizophrenic subjects, who completed PBI ratings for their parents, while a blind interviewer made ratings on parental attitudes and behaviours (during an interview) and conducted the CFI to generate EE ratings - with all three measures being included in separate factor analyses of the maternal and paternal data sets. PBI scale scores loaded on a 'PBI factor' but not on factors labelled 'warmth' and 'overprotection', which was interpreted as a reflection of method variance.

(c) Construct Validity.

Whilst there are no objective measures against which to test construct validity, convergent and divergent validity may be used by comparing PBI with other sources of relevant information, such as other parenting psychometric instruments and interview data.

In developing the EMBU-A (a form of the EMBU for adolescents), it was compared with the PBI scales, for convergent and divergent validity, on a sample of 1153 children, aged from 10 to 15 years (mean=12.4 years), both sexes equally represented.[141(139)] The PBI care scale was positively correlated with the EMBU-A Emotional Warmth scale (r=0.70 (F); r=0.64 (M)), and negatively related to the EMBU-A Rejection scale (r=-0.65(F); r=-0.60(M), $p<0.001$). The correlation between PBI Protection and EMBU Overprotection was r=0.54 (F, $p<0.001$) and r=0.59 (M, $p<0.001$). The EMBU Rejection scale also correlated with the PBI Protection scale (r=0.59(F); r=0.56(M), $p<0.001$). There was a moderate relationship between EMBU Emotional Warmth and PBI Protection (r=-0.33(F) and r=-0.34(M)), although EMBU Overprotection was not related to PBI Care (r=-0.07(F) and r=-0.10(M), ns). A higher-order factor analysis produced three factors; a Care factor with EMBU Emotional Warmth and Rejection factors and PBI Care (37.3% explained variance), a Protection factor with EMBU Overprotection and PBI Protection (20.2% explained variance) and a Favouring Subjects factor from EMBU scales (11.5% explained variance).

As an alternative to other comparable quantitative instruments, it may be appropriate to compare measures (or *patterns* of factor scores) with qualitative accounts of parenting, obtained by interview. In a prospective study[137] following up on babies born in Britain (in March, 1946), 3,262 subjects interviewed at age 43 years, were asked about parental mistreatment as children and invited to comment further. Overall, there was consistency between PBI scores and their retrospective free recall accounts. On average, those who reported mistreatment also rated parents as low on caring and high on control; those not

mistreated, who also had a happy upbringing, reported parents high on caring; restricted upbringing was marked by low caring and high control; unhappy upbringing, by especially low caring, but also high control; neglected upbringing, by very low caring, but less so by high control; with psychological abuse or sexual or physical abuse, there were ratings of low care and high control, and in particular, for sexual and physical abuse, ratings for fathers were more extreme.

Whilst not statistically compared with the PBI (or other parenting instruments), in a study [138] of primary school children (45 boys and 54 girls) and adolescents (46 boys and 56 girls), responses to interview questions provided twelve measures of family processes, which, when subjected to multidimensional scaling analysis, resulted in a two-dimensional configuration which was consistent with assumption of parental support and control dimensions.

Kitamura and Suzuki (1993)[145] examined the validity of their Japanese version of the PBI. Translated into Japanese, the PBI was given to high school students and to each of their parents. All subjects also completed the General Health Questionnaire and the Social Desirability Scale. In the PBI, the parents were asked to assess their own, as well as their spouse's rearing behaviours.

The authors found that overall, mothers and fathers agreed well on the ratings of their rearing attitudes, where as students agreed less well with either parent. They also found that among student ratings, factor structures were similar to those of Australian samples. Students perceived differential high and low levels of care and over-protection. The mothers however, were found to regard care and over-protection as equivalent. Overall the authors suggested that the Japanese version of the PBI had no less validity than the english version in terms of comparisons between all respondents, the influence of social desirability and the structure of factors. They also suggested that the PBI may extract rearing patterns independent of cultural factors.

Validity of retrospective reports of early memories

There are differences of opinion, regarding the reliability and validity of retrospective reports of early memories. Potential sources of error include 'amnesia' of early childhood memories, limitations of normal memory and reconstruction by being conventionalized or socialized, or given a totalitarian bias for ego enhancement and passing on blame, or may

be biased by personality, trait characteristics, plaintive set, mood, psychopathology and may differ between family members.[125,140(139)]

In a review[125] evaluating research evidence pertaining to these issues, conclusions drawn were that while there are limitations that must be borne in mind, concerns at unreliability are exaggerated. Autobiographical memories are acknowledged as vulnerable to reconstructive bias, and while recall of peripheral details and temporal information may become increasingly inexact, recollection of central features of events has been found to be accurate and reasonably stable over time. This is reflected in the reliability of the PBI, which may owe much of its robustness to use of global judgments of parenting, rather than more specific evaluations. Research findings on effect of psychopathology on memory were inconsistent, but a limitation of studies is that they focus on impersonal stimuli, while results of naturalistic studies suggest that recall is as reliable as for nonpatients. In another review[140(139)] the author concludes that while there are no conclusive answers to the varying claims, the balance of evidence does suggest that memories of parental behaviour might be quite stable.

(i) Construct validity is difficult to prove, and it is often best addressed by examining the relevance of alternative explanations or factors that might lessen validity. Specifically, in this instance, the extent to which PBI scores might be affected by perceptual distortions of mood state or trait characteristics such as a plaintive set or social desirability.

Mood

The effect of a depressed mood has been examined in several studies. In the first,[14] noted earlier, 46 clinical depressives scored the PBI when they were depressed and after significant improvement, the mean interval between testing being 9 weeks. Mean PBI scores were similar on each occasion (ie there was no general tendency to score parents as less or more caring/protective when depressed), and the test-retest correlation coefficients were strikingly high (0.87 - 0.92). Again as noted earlier, a North American study[15] also showed strikingly high correlations (0.90-0.96) and no change in mean PBI scores when depressives were first assessed and after improvement. A third study,[19] also noted earlier, involved women rating their mothers on the PBI scale in the post-partum period and 2-4 years later. Examining subjects initially depressed and then remitted, those depressed on both occasions and those not depressed on either occasion, the authors observed that PBI scores "were remarkably stable over time" for each sub-group. Another study 121 of undergraduate students reporting feelings of depression (ranging from minimal to severe as measured by the BDI), test-retest reliability estimates for 15 subjects

who had become more or less depressed (+/- X points on the BDI) in the three months between testing occasions were 0.83 for the PBI care scale and 0.96 for the PBI overprotection scale. Further, change scores for this subgroup and for the whole sample (n=96) were not significantly correlated with change scores on the PBI.

Multivariate analysis of covariance (MANCOVA) tested for covariate effects of hostility, anxiety and depression (change scores), on change in PBI scores across time, for a sample of 315, aged from 20 to 88 (mean age 45.7, SD 16.2).[142(139)] Results indicated that memories of parental rearing styles are subject to mood influences (except state depression), but changes are marginal, with changes in state anxiety and hostility accounting for only 6% of the variance in changes of paternal care scores, and state anxiety and trait depression accounting for only 3% of the variance in maternal care change scores. Covariate effects suggest that paternal care scores increased with increases in state anxiety (B=0.30, t(242)=3.7, p<0.02), while they decreased with increases in state hostility (B=-0.24, t(242)=-3.3, p<0.01), whilst maternal care scores also increased with increases in state anxiety (B=0.28, t(242)=3.4, p<0.01), and decreased with increases in trait depression (B=-0.18, t(242)=-2.3, p<0.02). (This positive effect of anxiety on recall of Care was not replicated in a patient group of 46 treated for social phobic complaints). Parental overprotection did not appear to be influenced by mood changes at all. A group of twenty 'anxious/depressed' (meeting diagnostic criteria for anxiety or depression or both, on one occasion, but being asymptomatic on the other) were compared with 205 controls (asymptomatic on both occasions). There was a significant main effect for the 'group' factor (F(3,195)=4.84, p<0.01) for PBI data, with extreme cases recalling less parental care and more overprotection (p<0.05) and there was no change across time, for either group.

Another study[143(139)] testing for effects of induced mood (depressed, neutral or elated) assessed childhood memories (positive and negative), before and after induction, using questionnaire cued recall (PBI) and free recall (by interview), and found evidence of mood bias, on both methods of recall. Cued recall of PBI Care items was influenced by depressed mood, and cued recall of overprotection items was influenced by elated mood, although it was acknowledged that experimental manipulation of mood may not be a true representation of naturalistic mood states.

In a review[125] of studies, there was evidence of mood congruence effects for recent memories, but *not* for memories of significant past events. In the study[132] to evaluate the *u* index as a test to discriminate between state and trait measures, low *u* indices for maternal care (.13), paternal care (.08), maternal overprotection (.03), and paternal overprotection

(.05) support these measures as not being state dependent, in contrast to *u* indices of .30 to .35 for state measures of anxiety, depression and hostility.

Personality and trait characteristics

The degree of self-criticism as a vulnerability factor for depression was examined in a study[120] of 75 medical students (see non-clinical depression studies section for further details). Subjects completed the a self-criticism measure and the PBI together with a number of other questionnaires on two occasions three and a half months apart. Controlling for depression, results showed subjects who scored high on self-criticism at both measurement points reported significantly less maternal care and more maternal overprotection than did the remaining subjects. There was a similar nonsignificant trend in reports of paternal care and overprotection.

Any social desirability effect was examined[3] by intercorrelating PBI and Eysenck Personality Inventory 'lie' (or social desirability) scale scores. Those returning higher 'lie' scores tended to report their parents as more caring (0.03 - 0.19) and less protective (0.14 - 0.19), as would be anticipated, but all associations were weak and statistically non-significant.

Levels of neuroticism (again as measured by the EPI scale) have been shown[5,27] to be associated negatively with PBI care and positively with PBI protection scores, albeit weakly and generally non-significantly. As neuroticism may, to some degree, reflect a 'plaintive set' bias or capacity to misattribute blame, the possibility is again suggested that such a personality style might both cause a subject to rate a parent negatively and to score high on symptoms, creating associations between the latter two variables. To the extent that such a phenomenon might occur, the validity of the PBI is not necessarily weakened as a measure of 'perceived' parenting (if that is what the neurotic patient actually perceived and responded to) but causal postulates (ie that a certain parental style determines a specific disorder) would be clearly weakened. On the other hand, anomalous parenting might also induce neuroticism in recipients.

(ii) Another way of examining for the relevance of a general response bias is to intercorrelate PBI scores with another measure assessing other, current, interpersonal relationships such as intimate relationships and social support. If such a bias is operating, it might be expected that significant links would be demonstrated (with subjects scoring all relationships negatively or positively), although the demonstration of a significant link may occur for other reasons (e.g. a pattern to select or associate with others showing similar interpersonal characteristics).

Marital

The latter strategy has been examined in several studies. In the first,[28] PBI scores for parents were intercorrelated with scores returned by the female subjects' assessing their husband's level of affection or care, to determine if there was any general tendency to score others as caring or uncaring, so challenging the validity of the PBI as a measure of 'actual' parental characteristics. The mean coefficient for the expected positive correlations was +0.20 and for the expected negative associations was -0.04, arguing against the possibility of any strong response bias. Hickie[99] studied 136 melancholic and non-melancholic depressed patients attending the Mood Disorders Unit, Sydney, and who completed PBIs and scored their intimate on dimensions of care and control assessed by the Intimate Bond Measure or IBM.[29] Links between parental and partner 'care' were all less than .19 (and NS) while, for control, correlations ranged from -.01 to +.37, and suggested that there was overall little evidence to suggest a general association. However, for those reporting very low parental care (ie PBI < 10), their chance of scoring a partner as uncaring (ie < 10) was increased (OR = 3.1) - which, if not chance due to small numbers, could reflect a response bias or a direct continuity effect. In a similar analysis, Hickie et al[100] studied 69 non-melancholic depressives and found (i) no link between EPI neuroticism scores and PBI scores (all correlations < .12), (ii) no general link between PBI and IBM scale scores, except again for those who reported very low PBI care who were somewhat more likely to report their partner as low care on the IBM.

Truant[30] examined for links between early parent-child relationships and quality of marriage by having 124 consecutive attenders of a Canadian family medical centre score their parents (and other parent-figures) on the PBI and their spouse on the Locke-Wallace marital adjustment test. Importantly, PBI scores for mothers and fathers were not significantly linked with marital quality scores. However, poor marital quality was linked with low PBI care in relation to the 'least caring parent' (50% fathers, 40% mothers, 10% others), most clearly for female respondents and after controlling for the effects of neurotic symptoms (the last being an important analysis to exclude the influence of a general negative response bias). The links described were no longer present in the absence of major childhood separation experiences, and were strongest in a female sub-sample screened to exclude risk factors to marital quality (eg no major separation in childhood, no previous marriage, no current or past emotional illness), and when parental care and low protection were strongly linked with better marital quality. The researchers provided persuasive evidence to suggest that the links were unlikely to have reflected a response bias, whereby poor marital quality generates a negative recall of childhood experience. They suggested that the failure to find links between marital quality and perceived mothering and fathering, as against demonstrating links for the 'least caring' parent or

parent-figure, might well reflect the much greater influence of a traumatic and negatively perceived relationship in comparison to "the protective influence of a co-existing good relationship". Additionally, they suggested that the seeming specificity of the links to female subjects might reflect sex differences in attachment, and the key relevance of childhood separation in determining the model. Thus, they held that their findings were compatible with an interactional effect whereby the effects of separation experience are "determined by the degree of parental care experienced before, during and after the experience."

In a subsequent paper, Truant et al[93] failed to find any link between PBI scores and adult marital quality (using the Locke-Wallace measure) in a psychiatric out-patient sample - and speculated as to reasons for the difference with a non-psychiatrically disturbed sample - without resolution.

A study[128] based on depressed and non-depressed women (aged 25-34 years) and their husbands, examined if recalled maternal care affected later intimate adult relationships (quality of relating, capacity to give affection, age at first marriage, quality of marriage, outcome of firt marriage) and if effects of partners' recalled maternal care summate and if recalled good paternal care compensates for recalled poor maternal care. Recall of poor maternal care, but not paternal care, was significantly associated with depression, for these young women, suggesting that the "direction of causality is from poor care to depression, for there is no reason why depressed women should single out mothers rather than their fathers in their gloomy view of childhood". Subsequently, only the maternal care score from the PBI was used, and this was significantly lower for depressed than non-depressed women (20.6 vs 30.3, $t = 4.59$, $p < 0.001$) and also significantly lower for the husbands of depressed than those of the non-depressed women (26.9 vs 30.5, $t = 2.03$, $p < 0.05$), suggesting that both non-depressed women and their husbands had "particularly favourable childhoods". To separate the depressive effect of poor maternal care from relating effect, analyses were conducted separately on the three groups of 49 depressed and 40 non-depressed women and 80 non-depressed husbands, with comparisons within each group being made across three levels of maternal care (*good*, *intermediate* and *poor* Care). Later *'quality relating*', as measured by the Self-Rating Questionnaire (SRQ) and Partner-Rating Questionnaire (PRQ), revealed there was a tendency for quality relating to become worse with increasingly poor maternal care. For the non-depressed groups, this was significant for the SRQ, but not for the PRQ, whereas for the depressed women (who overall, had worse relating scores than the non-depressed groups), this trend was significant for the PRQ, but not for the SRQ. There was a trend for *'capacity to give affection*' to be associated with maternal care, although this trend reached significance only for the non-depressed women, on the 'affection given' score of the Marital Patterns Test ($F = 3.74$, $p < 0.05$). The mean *'age*

at first marriage' tended to be lower for women (irrespective of diagnostic category) and husbands who recalled maternal care as poor. Mean age at first marriage for women with a care score <31 was 19.7, and for the remainder was 21.1 ($t = 2.37$, $p = 0.02$). For husbands, it was 21.8 for those with a care score <32 and 23.1 for the remainder ($t = 1.31$, ns). *'Quality of marriage*' (assessed by interview) for first or current marriage, was not related to maternal care for non-depressed women, with a very small number having poor quality marriages, for each 'care' group. In contrast, for depressed women, 68.1% had poor first marriages and 63.8% had poor current marriages, there being a similar proportion of poor first marriages in the good and intermediate care groups (53.3% and 52.9%), but 88.2% in the poor-care group. For non-depressed husbands, the proportion of poor first marriages for good, intermediate and poor-care groups was 20.8%, 37.0% and 65.6% and for poor current marriages, was 12.5%, 15.9% and 58.6%. *'Outcome of first marriage*' showed that significantly more men and women in the low care groups had been divorced and were in second marriages, at the time of the study. *'Summation of effect*' of partners' maternal care scores on quality of marriage was demonstrated across six categories of wife-husband combinations of maternal care levels. The marital score was worst when both partners recalled poor care, improving through combinations with one recalling poor care and one recalling good, to the most favourable category, where both partners recalled good care (F (for six categories) = 3.87, $p < 0.005$). There was no evidence that recalled good *'paternal care compensated*' for recalled poor maternal care (although for a sample of older women in the same study, for whom parental care was assessed by interview, for depressed women who recalled poor maternal care, those who recalled good paternal care scored more favourably in relating and marriage than did those recalling poor paternal care).

Social support

Sarason[31] measured perceived social support, life satisfaction and PBI scores in a sample of university students as predictors of perceived social support (both numerically and in terms of satisfaction) in the group 18 months later. Intercorrelation of baseline variables, both for males and females, showed significant links between the measures of perceived social support and maternal care (mean correlation = 0.40) and paternal care (mean $r = 0.29$), and somewhat weaker negative links with parental protection (mean for mothers = -0.19, for fathers = -0.12). The researchers tested for a response bias, whereby those "optimistic about their lives would perceive their current and past social relationships more positively", so producing associations between the several variables, by partialling out scores on a "measure of life satisfaction", without demonstrating any significant changes in the simple correlations. The authors stated that while that finding did "not eliminate the possibility that subjects are distorting their ratings of past parental relationships, it appears

that any such distortion is not the result of a general tendency to evaluate one's life in negative terms".

In multiple regression analyses, examining the capacity of baseline variables to predict current social support, satisfaction was linked with higher PBI maternal care scores in male subjects and with lower maternal protection scores in the females, while fewer social support figures linked with higher paternal protection scores in females but not with any PBI variables in the males. The authors concluded that the results supported views by Bowlby and others that securely attached children will develop better social relationships as adults. After demonstrating that perceived social support is rather stable over time, the authors suggested that the PBI data indicated a developmental precursor - that "the quality of parents' involvement with their children might be a significant influence over the children's later sense of social embeddedness". It should be noted, however, that as many of the subjects would still have been in contact with their parents, parents would have been incorporated in both the predictor (PBI) and outcome (social support) variables, and this confounding influence could have brought about associations independent of any perceptual bias operating.

In a subsequent paper, Sarason[22] reported intercorrelations of PBI scores with a large number of measures of social support in a sample of 207 undergraduate psychology students. Basically, PBI scores were significantly associated with most of the social support measures, whether assessing the size of, or satisfaction with the social support network. Flaherty and Richman[32] intercorrelated current social support in a sample of medical students with PBI scores. Higher parental care (more distinctly for mothers) was associated with higher ratings on current social support, both for all relationships and non-familial ones. In a similar study, Parker and Barnett[33] intercorrelated PBI scores with ISSI scores (assessing perceived current levels of social support), in a group of married primiparous women shortly after the birth of their child and one year later. PBI maternal care scores were significantly linked with ISSI 'availability of attachment' and 'availability of social integration', the former remaining significant after partialling out neuroticism scores of the mothers. Twelve months later, three of the ISSI variables were significantly linked with PBI maternal care but, after partialling out neuroticism scores, maternal care remained significantly linked again only with 'availability of attachment' scores. In all these latter studies, the possibility of confounding the predictor and outcome variables exists, so that links may reflect (a) a causal process, (b) a response bias and/or (c) a confounding effect. As the earlier noted studies (by Hickie and colleagues) assessing for links between independent 'others' (parents assessed by the PBI and the intimate/spouse by the IBM) have no confounding potential, and have consistently failed to find a general association

between scoring parents and intimates in clinical depressives and non-clinical subjects, they provide a strong argument against a perceptual bias of any magnitude which, to the extent it influences judgments of interpersonal relationships, might discredit the PBI as a measure of 'actual' parenting.

(iii) Corroboration with retrospective accounts of others (parents and siblings) may be used to verify accuracy of recollections of childhood memories, but reliability may be found to differ for different classes of informant.[125] Good agreement has been demonstrated between patient and siblings, on their parents. While there is agreement between patient and mother, on parenting, it is much lower, with the mother recalling herself as being more caring than does the patient, although there is high agreement between patient and mother with regard to recall of factual information. Mothers may also recall aspects of their children's development and character more favourably that actual records show. Such dissonnance in reports may result from self serving biases if parents wish to minimise failure, or if there has been neglect or abuse, whilst other family members may be unaware of occurrences of particular events, so such reports may not be valid.

General comment: Gerlsma et al[88(139)] reviewed measures of parental rearing style, found 14 ones derived factor analytically, and applied a number of psychometric criteria, and concluded that 3 (PBI, CRPBI, EMBU) met appropriate criteria. They then undertook a meta analysis of applied research (see later).

A short review of the PBI properties was provided by Parker[90].

Construct validity - Short form PBI

In a subset of 51 males and 70 females from a large twin study,[135] correlations between the 1991 full length PBI and a subset of the seven items that comprise the short version, ranged from 0.89 to 0.94, demonstrating that the short version is a valid approximation of the full scale version. Similar low intercorrelations were obtained between the 1990 short versions of the IBM, IPSM and the seven-item PBI (r=0.01-0.24), and between the 1991 full length versions (r=0.06-0.37), suggesting that independence of these tests was maintained.

Applied PBI research will now be reviewed.

ANXIETY STUDIES

(A) Non-clinical groups:

Several studies have examined for links between PBI scores and Costello-Comrey trait anxiety measure, designed to assess any predisposition to develop anxious-affective states. In a study of 289 university students,[34] higher anxiety levels were significantly associated with low maternal care (r = -0.25) and with maternal protection (r = 0.23) but not with paternal care (-0.14) or paternal protection (r = 0). In a similar study of 236 university students,[27] respondents were requested to nominate their two most important parent-figures, as against biological parents, and similar analyses were undertaken. Links between PBI scores for those respective parent-figures and trait anxiety levels (similarly measured) were -0.14 (NS) and -0.22 for care, and +0.25 and 0 for protection. Mean anxiety levels were highest for those who nominated their most important parent to the 'affectionless control' quadrant, while neuroticism levels (often considered to be synonymous with trait anxiety) were significantly highest for those nominating either parent-figure to the 'affectionless control' quadrant.

PBI scores for adopting parents[35] were returned by 109 adoptees who responded to a media appeal, with 63% having been adopted in the first month of their birth. Higher Costello-Comrey scores were associated with lower parental care (-0.36 for mothers and -0.12 for fathers) and higher parental protection (+0.26, +0.07) scores, with low maternal care being the strongest predictor of high anxiety. As the associations were very similar to those reported in non-adoptees, this paper argues against a confounding genetic influence, whereby a gene for anxiety might determine a particular parental style in parents and (independently) higher levels of anxiety in the child, so creating a spurious (and non-causal) association between parental style and anxiety levels.

In a study of 78 MZ and DZ twins,[24] higher Costello-Comrey anxiety levels were linked with lower maternal (0.38 for MZ and 0.37 for DZ) and lower paternal (0.26, 0.04) care, and with higher maternal (0.45, 0.52) and paternal (0.34, 0.51) protection.

In a study[36] of 378 pain patients (including 127 assessed in a psychiatric clinic) scores on an anxiety scale were weakly linked with low maternal (0.12) and paternal (0.20) care, and with higher maternal (0.14) and paternal (0.19) protection.

These several studies therefore show a relatively consistent pattern of higher anxiety levels being associated with low parental care (stronger for mothers than fathers) and, somewhat less strongly, with parental overprotection.

It has been generally considered that females manifest more depression and anxiety than do males, particularly when working in male dominated fields, and that earlier familial experiences may contribute to this. An empirical study[127] in a traditionally male dominated

field, examined gender differences in prior psycho-socialisation vulnerability factors and medical school environmental factors, and their relative contribution to 'female' and 'male' psychopathology (depressive and anxiety symptomology, quantity and frequency of alcohol consumption and drink-related problems). A cohort of 195 first year medical students completed questionnaires at admission (time 1) and the 180 remaining in the study, near the end of the year (time 2). Females comprised one-third of the cohort. Both male and female students experienced increase in psychopathology, which was similar in some ways and divergent in others. On anxiety, females manifested a trend level increase, while for males, there was a significant decrease ($p<0.001$). However, quantity of alcohol consumption increased, for males ($p<0.001$). Parental bonding and perceived medical school stressors differentially contributed to subjective distress, for males and females, depending on the particular psychopathology outcome. (See also, Depression (A) Non-clinical studies). In multiple regression analyses for females, with time 2 anxiety regressed against time 1 measures (anxiety, earlier parental experiences, locus of control, interpersonal dependence, self esteem, flexibility, assertion) and time 2 measures (social support, medical school stress), medical school stress (.44, $p<0.01$) and paternal affectivity (-.33, $p<0.01$) were significant and paternal overprotection contributed at the trend level (.30, $p<0.10$).

(B) Clinical groups:

A controlled study of 50 consecutive out-patients diagnosed as having an anxiety neurosis[37] established that the patients both reported less parental care (somewhat more deficient for fathers) and parental overprotection in comparison to matched controls. As yet, there has been no published study of separate groupings of those with panic disorder and generalised anxiety disorder to assess for any specificity to one or other anxiety disorder.

Faravelli et al[85] gave the PBI to 32 consecutive out-patients with a DSM-III-R diagnosis of PD (6 had no phobic avoidance, 4 mild agoraphobia, 7 moderate avoidance, and 15 severe agoraphobia). Eight males and 24 females, mean age of 31 years. Controls were hospital employees and acquaintances. PDs reported sig less care and sig more protection from both mothers and fathers. PDs more likely to allocate mothers to affectionless control (78% vs 25%) and fathers (56% vs 25%), and much less likely to report optimal maternal bonding (3% vs 25%).

Leon and Leon[105] compared a group of normal controls (n=30) with outpatients from a variety of settings who had been previously diagnosed, using ICD-9 criteria, with PD (n=60), GAD (n=30) and depression (n=30). All were between the ages of 18 and 55 and

there were no significant sociodemographic differences between the groups. Quadrant assignments showed normal controls were more likely to identify parents as high care-low protection (optimal), while there was a heavy concentration of parents identified as low care-high protection (affectionless control) amongst the clinical groups. The difference in quadrant assignments was significant for maternal PBI between the control group and the depression and GAD group, and for paternal PBI between the control group and all three clinical groups. Calculations of relative risk for existence of a disorder given parenting style showed minimal risk for high care-low protection and high care-high protection, and very high risk for low care-high protection style of parenting. Paternal assignments played a more important role as a risk factor than maternal assignments.

Gerlsma et al*88(139)* reported a meta analysis using the PBI (and other measures), and claimed a consistent picture with 'affectionless control' being over-represented in the reports of those with anxiety disorders. Silove et al[103] gave the PBI to 80 clinically anxious patients (receiving treatment). In the combined sample, the patients (cf matched controls) reported less paternal care and greater parental overprotection. When considered in separate sub-groups of panic disorder and generalized anxiety disorder, there was the suggestion of differential results. The panic disorder patients differed only (from the controls) in reporting greater maternal overprotection, which the authors speculated may reflect a parental consequence of noting early separation anxiety in such children. The GAD sub-sample reported less maternal care and greater paternal protection. A series of analyses (logistic regression, contrasting various combinations of maternal and paternal style, etc) suggested that the GAD patients reported more extreme deprivation or parental anomalies. [The paper should be consulted for specific details]

DEPRESSION STUDIES

(A) Non-clinical groups:

A number of studies have examined for links between PBI scores and depression, principally using the Costello-Comrey trait depression measure which was designed to measure the predisposition to develop a depressive mood. In the study[34] involving 289 university students higher depression levels were associated most clearly with low maternal care (r = -0.30;) and less clearly with low paternal care (r = -0.20), maternal (r = 0.15) and paternal (r = 0.09) protection. The highest levels of depression were associated with the PBI-defined parental style of 'affectionless control' (58% and 19% higher depression levels

in relation to mothers and fathers respectively) than depression scores for those who reported 'optimal parenting'.

In the related study of university students,[27] trait depression levels were linked -0.24 and -0.31 with care, and +.17 and +.15 with protection, in relation to the most and the next most important parent-figure respectively. When quadrant assignment was examined, allocation of either parent-figure to the 'affectionless control' quadrant was associated with the highest level of trait depression, and very strongly with the number of episodes of depression in the preceding 12 months, but not with duration of the average depressive episode.

Zenmore and Riholm 107 got 50 male and 50 female university students to complete a range of questionnaires measuring a number of variables. The variables measured were,

a) Current level of depression - Beck Depression Inventory - Short Form BDI and the Depression Adjective Checklist,
b) Depression Proneness - self rating of whether a variety of depressotypic symptoms were experienced in the last 2 years,
c) Parenting style - PBI,
d) Fears - subjects indicated which items on the Fear Survey Schedule upset them more than they upset most people,
e) Self Esteem - Rosenberg's Self Esteem Scale.

In a hierarchical regression analysis to partial out current depression, depression proneness was found to be linked significantly with less caring fathers for male offspring, and more intrusive, controlling mothers for female offspring. Self-esteem was not found to mediate the relationship between parenting practices and depression proneness. Further, the pattern of correlations between parenting behaviours and depression proneness differed from the pattern of correlations (which were all nonsignificant) observed between parenting practices and fearfulness. The authors suggest the dissimilarity in the patterns of correlation indicate that perceptions of parental rejection and control are not characteristic of psychopathology in general.

Whisman and Kwon[121] had 150 undergraduate students complete the PBI, Dysfunctional Attitudes Scale (DAS), Expanded Attribution Scale (EASQ) and the Beck Depression Inventory (BDI). Increased parental care was significantly associated with fewer depressive symptoms reported (-0.32, with bonferroni correction -0.23), fewer

dysfunctional attitudes (-0.31) and a less depressotypic explanatory style (-0.23)). Increased parental overprotection was only significantly associated with greater number of reported depressive symptoms (0.28, with bonferroni correction 0.25). The association between parental care and depressive symptoms disappeared once dysfunctional attitudes and explanatory style were controlled for using multiple regression. However, parental overprotection continued to explain a small but significant percentage of variance in depressive symptoms (3%) when dysfunctional attitudes and depressotypic explanatory style were controlled for. Further, controlling for parental care did not eliminate the previous significant association between the number of depressive symptoms and dysfunctional attitudes and depressotypic explanatory style. Whisman and Know conclude "there is strong evidence that depressotypic attitudes and attributional style mediate the relation between parental care and symptoms of depression.

In the study of 78 MZ and DZ twins,[24] higher Costello-Comrey depression levels were inconsistently linked with lower parental care (in MZ twins, -0.15 for maternal and +0.01 for paternal care, and -0.36 and -0.17 respectively for DZ twins), and with higher protection scores (+0.18 and +0.34 for maternal protection for MZ and DZ twins respectively, and +0.26 and +0.48 for paternal protection respectively).

In a study[28] of women whose mothers had died in their early childhood, and whose fathers had remarried, higher Costello-Comrey depression scores were associated with low maternal (-0.23) and paternal (-0.33) care and high maternal (+0.17) and paternal (+0.07) protection, as they were with low step-mother care (-0.40) and high step-mother protection (+0.22).

Saler and Skolnick[106] had 90 adults volunteers (38 males, 52 females), between the ages of 20 and 50 years who had experienced the death of one parent (70% father deceased, 30% mother deceased) before the age of 18, complete a questionnaire package. The package consisted of the PBI (rating the surviving parent as they remember them for the first 18 years), Mourning Behaviour Checklist, Center for Epidimiological Studies Depression Scale (CES-D), and the Depressive Experiences Questionniare. Females in the present sample had significantly higher mean scores on the DEQ Self-Criticism and Efficacy scales compared to the normative data available for the DEQ. Multiple regression analysis established that both PBI scores and PBI parenting style were unable to independently account for variance in CES-D scores. However, a lower care score on the PBI for the surviving parent was shown to be significantly associated with lower Dependency and higher Self Criticism scores on the DEQ. Further, quadrant assignments showed that subjects who described parenting style as falling into the "neglectful" or "affectionate

constraint" categories were significantly more likely to describe depressive experiences of self criticism than those in the "optimally bonded" category. A similiar nonsignificant trend of higher self criticism scores was observed in the "affectionless control" category. Subjects in the "neglectful" category reported the highest self criticism scores.

Howard[38] studied a group of adolescent male offenders at a state training school. Depression levels were again assessed using the Costello-Comrey scale, and simple correlations showed significant links between higher depression and lower PBI care (-0.34 and -0.45 for mothers and fathers respectively) and higher PBI protection (+0.33 and +0.27) scores. Low paternal care was the strongest predictor (20.4% of the variance) in a multiple regression examining the comparative relevance of PBI variables and a broken home on depression levels. The highest levels of depression were returned by youths who reported 'affectionless control' from either parent.

When PBI scores for the adopting parents of 109 adoptees[35] were correlated with Costello-Comrey depression levels in the adoptees, higher depression was linked with low care (-0.47 and -0.25 for mothers and fathers) and with high protection (+0.37, +0.11), with low maternal care being the strongest predictor (22.0% of the variance). Again the importance of this analysis, in demonstrating similar associations to those generally reported in relation to biological parents, is to suggest that links within samples scoring biological parents are unlikely to be determined by a common genetic determinant inducing both an anomalous parental style and high depression levels, a non-causal explanation.

In the study of 378 pain patients,[36] scores on the depression sub-scale of a depression measure were unassociated with maternal (-0.07) and paternal (-0.12) care, and with maternal (-0.01) and paternal (0.02) protection.

Leigh et al[109] compared a group of 62 female and 50 male normal hearing undergraduates with 51 female and 51 male deaf subjects, who experienced the onset of deafness at age 2 or earlier. Subjects were required to complete the Beck Depression Inventory (BDI), Sociotropy-Autonomy Scale (SAS), and the PBI. The original questionnaires were complete by 56 of the hearing subjects, while the rest of the subjects completed a revised version of the questionnaires. The revised versions were said to be appropriate for use with a college-aged deaf population and were shown to have generally good internal consistency. Mean PBI scores were found to be significantly lower in the hearing sample for the revised version than the original version. Results showed hearing subjects rated parents as significantly more overprotective than deaf subjects, however this association disappeared when only those who completed the revised version were

compared. No difference was observed between groups on ratings of perceived parental care. BDI was negatively associated with perceived maternal care and positively associated with perceived maternal overprotection in both groups. Sociotropy was positively associated with the BDI in the hearing group but not the deaf group. Perceived parental care and protection and sociotropy were found to explained a significant portion of the variance in BDI scores in a heirarchical multiple regression once effect of group was controlled. Further, SAS sociotropy score was significantly associated with lower maternal care in hearing subjects and with higher perceived maternal overprotection in deaf subjects.

Richman and Flaherty[13] intercorrelated CES-D (Center for Epidemiologic Studies Depression) scale and PBI scores in a sample of 153 medical students. Higher depression levels at entry to medical school correlated significantly with lower maternal ($r = -0.20$) and paternal ($r = -0.18$) care, and with higher maternal ($r = +0.14$) protection scores collected at that time. Subsequently, Richman and Flaherty[18] examined whether PBI scores collected at that time were predictive of mood state and other outcome measures seven months later. Three of the four PBI scales predicted higher depression levels at seven months: maternal protection (+0.31), paternal protection (+0.21) and low paternal care (-0.20), while low maternal care was non-significantly linked (-0.14). In a multiple regression analysis examining outcome depression levels, a number of predictors were considered, including PBI data, personality variables (eg dependency, self-esteem) and baseline depression levels. When the other variables were effectively controlled, low paternal care and maternal overprotection remained significant predictors of depression.

Brewin et al[120] distributed a package of questionnaires to 90 2nd year medical students at initial testing (time 1) and then 3 1/2 later (time 2). The package consisted of a self-criticism measure, Depression Scale of the Symptom Checklist-90, the Marlowe-Crowne Social Desirability Scale (time 1 only), a revised Family Attitudes Questionnaire (time 1 only) and the PBI (time 2 only). 75 students completed the questionniaire package on both occasions (83% response rate). Better recalled parenting (higher care score and lower overprotection score) was significantly associated with lower levels of depression and self criticism. The association between parental ratings and self-criticism was no longer significant once depression and social desirability were controlled. However, further analysis using ANCOVA controlling for depression showed that subjects who scored high on self-criticism at both measurement points (high trait self-criticism subjects) reported significantly less maternal care and more maternal overprotection than did the remaining subjects. There was a similar nonsignificant trend in reports of paternal care and overprotection. Further, high trait self-criticism was significantly more common in subjects who report below average relationships with both their parent. Brewin et al support the view

that early adverse parenting influences both self criticism and depression in later life. The "true relation between parenting and self-criticism" may have been underestimated in the present study as a result of controlling for depression.

Mackinnon et al.[4] selected a sample from the Canberra general population by use of the electoral register and interviewed 386 in the first wave and 369 in the second wave (which variably occurred for quartiles 4, 11, 21 and 34 weeks later). At each interview a number of measures were completed, including the PBI and the DSSI (anxiety and depression sections of the Delusions-Symptoms-States Inventory). The simple correlations between PBI and DSSI were negligible, but the LISREL strategy formally involves predicting PBI scores from other variables and, perhaps more importantly, correspondence with the authors established that scores on the depression measure were heavily skewed (with a high percentage of subjects scoring minimally or not at all), which would have a major effect on the analyses. Other analyses were undertaken. For instance, those scoring high on the depression scale were compared to those scoring low, and the former reported significantly less paternal care (23.7 vs 26.8), but differences disappeared when EPI neuroticism was included as a covariate (see below). A similar analysis with high and low GHQ scorers established significant differences for paternal care (22.8 vs 27.8) and paternal protection (14.7 vs 11.7). Additionally, those scoring high vs low on the depression scale were contrasted on assignment of parents to the four bonding positions, and logistic regression established that, for females, low maternal care was associated with depression. Mean DSSI scores were higher for those assigning mothers or fathers to the 'affectionless control' when dichotomization was around the 50th percentile. The quadrant assignment relative risks were said to be "not high, and their pattern does not correspond with that observed by Parker". However, in all four analyses (sex of parent vs sex of respondent), the chance of 'optimal bonding' was slightly decreased (range 0.49 - 0.69) and 'affectionless control' generally increased (males vs mothers = 1.80; female vs mothers = 1.89; males vs fathers 0.93; females vs fathers 1.34).

Kitamura et al.[172] explored the psychosocial correlates of depression during pregnancy in a large sample of Japanese women. Questionnaires were administered at the beginning, middle and late in the pregnancy, with the PBI (Japanese version) being included in the middle set. Women with higher depression scores (SDS) showed significantly lower paternal and maternal care scores and significantly higher paternal and maternal overprotection scores. The childhood experience of poorer parenting was one of several psychosocial risk factors for antenatal depression identified by the authors.

Kerver, van Scott and de Groot[108] conducted a 12 month prospective study in which subjects were asked to complete the Zung Self-rating Depression Scale (SDS), Rosenberg Self Esteem Scale and the PBI. The sample consisted of 1000 randomly selected subjects, contacted by post at testing (time 1) and 12 months later (time 2), from a province in the Netherlands. Of those contacted 108 responded on both occasions and 85 were diagnosed as not currently depressed based on their SDS scores. The depressed group reported significantly less paternal care than the non depressed group at time 1. Also, there was a significant correlation at time 1 between all parental scores and level of depression when full range depression scores were used. Subjects classified as non depressed at time 1 who reported high maternal control showed an 8.5 fold increased risk of developing symptoms of depression 1 year later (time 2). There was no sex differences in reports of perceived parenting. Further, high maternal control was significantly associated with low self esteem in female subjects (r=-.20) and depressed mood at time 2 in females diagnosed as not depressed at time 1 (r=.36). The authors concluded that the results suggested maternal overinvolvement and control effects women more seriously than men. However, they stress the results should be interpreted with caution given the small sample size (low response rate) and also the criteria used for diagnosis of depression.

The possibility that links between PBI scores and depression levels may be mediated by personality variables (with certain personality styles such as neuroticism encouraging a negative judgment of the parent and the reporting of greater depression) has been noted earlier but is addressed again in relation to depression research. Parker[27] partialled out neuroticism scores from linked trait depression and PBI scores in a sample of university students. The simple correlations for parental care were minimally reduced (-0.28 to -0.27, and -0.33 to -0.27), while those for parental protection (+0.22 to +0.14, and +0.21 to +0.11) were reduced somewhat more when neuroticism was controlled. Richman and Flaherty[13] hypothesised that links between high depression scores and low parental care and high maternal protection might be mediated by their medical student respondents having a more external locus of control and higher interpersonal dependency levels but, using multiple regression analyses, they were unable to support those hypotheses. However, the link between higher depression and maternal overprotection was no longer significant when locus of control and dependency levels were controlled, suggesting a partial influence of recipient personality on parental overprotection levels.

Thus, in a large number of studies, higher depression levels have been, with one exception, linked with low parental care and, less so, with parental overprotection and with associations overall being slightly more pronounced in relation to mothers. The only negative study[36] involved pain patients where it might be anticipated that current

depression levels would be more influenced by state characteristics (such as pain) rather than by early developmental factors (such as parental style).

Vulnerability of offspring assigning either parent in the 'affectionless control' quadrant of the PBI, to develop psychopathology, may be strongly mediated by exposure to parental depression. This was revealed in a study[126] based on a sample of 220 offspring, considered at high and low risk for major depression, by virtue of presence or absence of major depression in their parents. This study examined associations between family risk factors (poor marital adjustment, parent-child discord, low family cohesion, parental divorce, and 'affectionless control' from the PBI), parental depression and psychopathology in offspring. Of the sample, 33.9% (39/115) of offspring with at least one depressed parent, and 14.9% (10/63) with nondepressed parents, scored a parent with 'affectionless control' parenting style. Overall, the rate of psychopathology was higher for the offspring with a depressed parent, although for these offspring, rate of psychopathology did not differ on the basis of 'affectionless control' (e.g., 41% of the 39 who assigned a parent to 'affectionless control' and 36.8% of the 76 who did not, met the criteria for a diagnosis of major depression). For offspring with nondepressed parents, however, the difference for rate of major depression was significant (50% of 10 vs 18.9% of 53, $p < .05$). With adjusted odds ratios from a logistic regression, for those assigned 'affectionless control', the risk of being diagnosed with major depression was considered to be increased 5-fold (OR = 5.02, SE LOR = 0.785, $p<.05$). Low family cohesion was also significantly associated with major depression in offspring of nondepressed parents.

In the study[127] examining gender differences in earlier parental experiences and psychopathology, in 195 first year medical students, female students did not find the medical school environment any more stressful than did males, there was no difference between them in depressive symptomology, and only a trend level difference in drink-related problems. In multiple regression analyses, for male students, time 1 depression (.46, $p<0.001$) and earlier parental (maternal and paternal) overprotection at time 1 (.29 and .33, $p<0.01$) significantly contributed to time 2 depressive symptomology, (although not to alcohol consumption at time 2). For female students, paternal (but not maternal) overprotection contributed significantly to time 2 depression (.38, $p<0.05$), whilst time 1 depression (.30, $p<0.10$) and assertion (-0.23, $p<0.10$) contributed at the trend level.

Short form PBI:

In a cross-sectional study[136] between pairs of female twins (N=1680, mean age = 30.1 $\pm$7.6), application of direction of causation models was not able to reject the hypothesis that depression (measured by the CESD) causes ratings of 'parental coldness' (measured

by the PBI seven-item short form), although the reverse (parental style causes depression) was more strongly supported. Various interpretations were offered, based on genetic contribution to parenting style, reporting style and depression.

Strahan[168] gave a sample of young adults (N=249, 75 males and 72 females, 17 to 30 years)an instrument designed to measure “attachment style”, the PBI and the Centre for Epidemiological Studies Depression Scale (CES-D)(see Radloff, 1991). Strahan conducted a factor analysis on his 40-item attachment style instrument and found two dominant factors; ‘comfort with closeness’, and ‘anxiety over abandonment’. Strahan reported close relationships between parental care and overprotection and levels of depression with the sample of young adults. Both males and females who perceived their mothers as being warm and affectionate, were more comfortable with closenessa and intimacy in peer relationships and more able to trust peers; and this quality was also found to predict lower levels of depressive symptoms. Females who reported high maternal care expressed fewer depressive symptoms and scored lower on ‘anxiety over abandonment’ in personal relationships. Male subjects who perceived their mothers as overprotective were more likely to report higher levels of depressive symptoms; and those males who perceived their fathers as overprotective were more likely to record greater ‘anxiety over abandonment’ and more symptoms of depression. Strahan argued that the sexes clearly differed in that overprotection by the parent of the opposite sex was directly linked to severity of depressive symptoms.

Kitamura et al.[200] examined the role of parental loss through death and early experiences with parents among women who developed post natal depression (PND). One-hundred and twenty antenatal clinic attendees were recruited for the study. Antenatal depression was associated with parental low care and maternal high protection scores. Interestingly, it was associated with early parental bereavement but not with separation. Further, the antenatal depression rate was increased by both early bereavement and ‘affectionless control’.

An investigation into depression in international exchange students[208] found that perceived parenting practices as measured by the PBI were not significantly related to depressive symptoms displayed by the students in a foreign community.

Parker et al.[200] assessed the clinical relevance of anxiety on the development of early onset depressions, using a non-clinical cohort sample. The authors found no clear evidence that early onset depression was contributed to by anomalous parenting, with only a link between early onset depression (minor or major) and maternal overprotection being demonstrated in a correlational analyses.

In a study assessing the role of low parental care as a risk factor to lifetime depression in a community sample, Parker et al [210.] assessed responses to two central PBI items (the `affectionate' item and the `control' item). Women who had a lifetime episode of major depression were significantly more likely to report low care from both parents as well as being female, divorced or separated or younger.

Sato et al [216.] assessed the relationship between PBI scores and lifetime depression in a sample of 239 Japanese volunteer workers . Subjects with (n=22) and without (n=217) any lifetime depression were compared on the PBI. Only scores on maternal care could distinguish the two groups, with the lifetime depression group having somewhat lower scores (24.4 vs 29.1) . In a logistic regression analysis, 'age' (5 years older) and low maternal care were two significant predictors of having lifetime depression.

In a further study by Sato et al [218] the role of dysfunctional parenting as a risk factor for lifetime depression was explore in a sample of 418 employed Japanese adults. Parental low care (rather than high protection) was primary in predicting depression in both male and female subjects. 'Affectionless control' (both parents) was a significant risk factor for lifetime depression for males, although only paternal 'affectionless control' was a risk factor for women.

Using data from a large longitudinal follow-up study, Rodgers[219.] reported on the relationship between reported parental behaviour and adult affective disorder. PBI scores were linked with general reports of childhood mistreatment, as well as more specific neglect and abuse. Low but significant links were found between PBI scales and affective disorder (negative associations for care and positive for control).

(b) Clinical groups:

Accepting the binary view that there are two principal depressive types, one a categorical disease with a genetic/biological base, and the other a more heterogeneous collection of disorders reflecting the interaction of vulnerable personality and life stressors, encourages examination of the relevance of PBI scores to separate depressive types. The first study[6,27] established no significant differences on raw PBI scores and PBI quadrant allocation when 50 bipolar depressives were compared with 50 matched controls. A replication study by Joyce[39] in New Zealand compared PBI scores returned by 58 bipolar patients and general practice controls, and found no difference between the two groups. He concluded that the PBI scores for his bipolar patients were "remarkably similar" to those

returned by the Sydney bipolar patients and that the findings "argue against" parental anomalies being of aetiological significance to this depressive disorder. Subsequently, Joyce[40] examined whether PBI scores returned by the bipolar subjects at discharge predicted rehospitalization over the next 12 months. While 72% were readmitted, PBI scores did not predict readmission. As the mean age of the sample was 35 years, it is unlikely that many were living currently with parents. Thus, while early parental characteristics did not appear to predict rehospitalization/relapse, the hypothesis that current parental characteristics (as measured by the PBI might influence the course of bipolar illness should be examined in a sample whose members are in close contact with parents.

By contrast, marked differences have been reported for 'neurotic depressives'. In the first study[6,27], 50 neurotic depressives, reported significantly less parental care, and greater parental protection (significant for mothers only) than matched controls. In terms of PBI quadrant allocation, the patients were quite unlikely to report exposure to 'optimal parenting' and much more likely to allocate mothers (odds ratio 4.7) and fathers (2.8) to the 'affectionless control' quadrant. The risk of exposure to one or more parent with such a perceived parental style was 6.7 for those neurotic depressives, a very high risk factor estimate.

A replication study[41] examined a larger sample of 125 neurotic depressives. The depressives reported both parents as significantly less caring and as more overprotective, and a sex of parent-sex of subject interaction was observed, with females returning more anomalous maternal rather than paternal PBI scores, and males the converse. A discriminant function analysis established paternal care and then maternal care as the strongest predictors of assignment to the neurotic depressive group. As a consequence, the influence of distinctly low parental care was quantified by examining the chance of scoring one or more parent less than 10 on the PBI care scale: such a score was returned by 31% of the patients, 6% of the controls and 2% of the non-depressed controls. The depressives were most likely to assign their parents to the 'affectionless control' quadrant, with the odds ratio of assigning one or more parent being 3.4.

In an American replication study,[15] 37 depressed out-patients of the Yale Depression Research Unit (78% non-melancholic) scored their parents on the PBI when depressed and some 4-6 weeks later when significantly less depressed (with PBI scores being remarkably stable over time). The depressives scores were compared with PBI data obtained from routine primary practice attenders (screened to exclude those with a psychiatric history) in another North American state. The depressives reported significantly

less parental care and significantly more parental protection, were more likely to assign their mothers (odds ratio 6.4), fathers (6.0) or one or more parent (4.4) to the 'affectionless control' quadrant, and 32% of them (as against 3% of the controls) were more likely to return a score of less than 10 on the PBI care scale.

Burbach et al (1989) (81) recruited 150 adolescents from a North Carolina community and applied a number of measures of caseness, including generation of DSM-III diagnoses. Three sub-groups were formed: depressed (n=12), psychiatric controls (n=16) and normal controls (n=75), matched on all variables apart from gender. Mean parental care scores were 25.4 (dep), 20.8 (pc) and 29.2 (nc), while parental protection scores were 13.8 (dep), 17.0 (pc) and 11.9 (nc). Diagnostic groups had a significant main effect on PBI parental care and protection. PCs differed from NCs but DEP did not differ from either group.(Authors note that DEP and NC groups would have differed if N's larger). Three groups were then pooled and number of depressive symptoms intercorellated, -0.28 with care and +0.17 with protection. Most of the PCs were conduct or oppositional disordered, so authors suggested that 'affectionless control' is neither sensitive to, or a specific risk factor to adolescent depression. Thus, they contemplated that affectionless control may play a "non-specific role in adolescent psychopathology" but also suggested that such a style may be a consequence and not necessarily an antecedent.

The relevance of anomalous parenting to neurotic depression and its seeming irrelevance to endogenous depression was demonstrated in an additional study.[42] A key strength of this study was that sample members had been diagnosed as having endogenous or neurotic depression on a much earlier occasion (1966-70) by an independent research team, with those diagnostic decisions having been made with considerable care (consensually by at least two psychiatrists) as part of a major inquiry into the typology of depression. The depressives were reassessed in 1983 and then requested to complete orthodox PBI forms. Earlier diagnostic decisions about the type of depression were preserved for this study and sample data for 26 endogenous and 40 neurotic depressives were compared with control data. The neurotic depressives were significantly more likely than controls to score both parents as less caring and their mothers as more protective. By contrast, the endogenous depressives did not differ from the controls on any of the four PBI variables. The endogenous sample were no more likely to assign their parents to the 'affectionless control' PBI quadrant, while the neurotic depressives tended to be more likely to so assign their mothers (odds ratio of 1.56), were more likely to so assign their fathers (2.09) and were more likely to so assign one or more parent (2.26). A PBI care score of less than 10 for one or more parent was returned by 3.8% of the endogenous depressives and their controls, by 2.5% of the neurotic controls and by 37.5% of the

neurotic depressives. As stated, the key importance of this study was in suggesting the respective relevance and irrelevance of anomalous parenting as a risk factor to two distinct depressive types. While the two depressive 'types' have quite differing imputed aetiologies, few discriminating risk variables have been quantified so distinctly, so that the PBI findings are quite striking.

Birtchnell (1988) (74) screened young adult, British-born married, south-east London housing estate-based female general practice attenders on a depression screening instrument designed and validated as selecting depressive 'cases'. High scorers (i.e. more than 17 were regarded as 'depressives' and low scorers as 'controls'. The depressives scored their mothers as significantly less caring and as significantly more protective, with similar trends for fathers not being formally significant, and the PBI findings were substantiated by interview-derived data from the subjects.

Hickie et al[100] compared PBI scores of 69 non-melancholic depressives with matched controls, the former reporting significantly less parental care and more maternal protection. The risk of the patients assigning one or both parents to the affectionless control group was 3.9 and the OR for assigning a care score of < 10 was 11.2.

The capacity of PBI scores to predict improvement in neurotic depressive disorders has been examined in several groups. In one study[43] of clinical depressives, while PBI scale scores and quadrant allocation failed to predict improvement 6 and 20 weeks after initial assessment, the mean age of the sample was 31 years and it was unlikely that few subjects were still living with their parents. A study of untreated community neurotic depressives[44] demonstrated a link between outcome and PBI scores ('functional' mothering predicting a better outcome) at 20 weeks but no link at 6 weeks, although the mean age of the sample (42 years) might suggest that few subjects were likely to be living with their parents. As noted earlier, a fair test of the proposition that parental style is associated with the course of illness would require limitation to those living or otherwise in close emotional contact with their parents. Nevertheless, Gotlib[19] studied women in the post-partum period and 30 months later, comparing the maternal PBI scores for those initially depressed and then remitting, those depressed on each occasion and those not depressed on either occasion. The non-depressives and the remitting depressives reported similar levels of maternal care, while the on-going depressives reported much lower maternal care scores on both occasions, so that the initial level of reported maternal care was a strong predictor of the level of depression 30 months later. The authors noted that "only those depressed subjects who reported both low maternal caring and high maternal overprotectiveness at the initial assessment were also depressed 30 months later".

In a related study Boyce et al[101] gave the PBI to a sample of 127 primiparous women during the second trimester, and assessed for depression at 1, 3 and 6 months post-partum. "Caseness' (ie using the EPDS and a cut-off) was predicted by low PBI care (one SD defined) with RRs (examining either parent) of 2.0 at one month, 1.8 at 3 months, and 1.5 at six months. PBI control was even less suggested with respective RRs of 1.3, 1.5 and 0.5. Regression analyses (EPDS as a continuous outcome measure and PBI as dimensional predictor measures), including the IBM and a measure of interpersonal sensitivity, suggested that at one month post-partum, low maternal care was the best predictor. At 3 months, paternal protection was the second strongest predictor. At six months, PBI scores were not significant predictors. The authors speculated on the suggestion of differing relevance over time, and that mothers who received dysfunctional parenting are particularly at risk of depression in handling the stress of a first child.

Fendrich et al[102] studied stability of recall of lifetime diagnoses in a sample (age range 6-23) at high vs low risk to depression. Stability in reporting lifetime major depression was not influenced by PBI allocation to low care or to affectionless control. In the Gerlsma et al[88(139)] meta analysis (of the PBI and other measures) they claimed that a pattern of low care and high protection was suggested but not as clear as for anxiety disorders.

Mackinnon, Henderson & Andrews[148] investigated the concept of "affectionless control" as an antecedent risk factor involved in adult depression. Nine hundred and twenty-two adult twins aged between 18 and 65 years were included in the study. Included in the 468 female subjects, 15 were diagnosed with dysthymia, 21 with a major depressive episode and 21 with both. The number of male subjects who fitted into those categories were 5, 12 and 5 respectively. Their findings supported the view that depressive adults report the experience of having received poorer parenting than do adult normals. However, an interactive pattern of low care and high control was not found to be significantly predictive of adult depression for the community sample used in this study. Rather the care dimension (low care) alone, exhibited a strong relationship with adult depression. The protection dimension, failed to add strength to the predictive quality of low care. Hence, the concept of affectionless control as a predisposing experience for depression was not supported.

A study by Rodgers[150] however, did find evidence for the existence of perceived low care and high control within adult subjects with depressive symptoms. He used the PBI to assess the relationship between perceptions of parental care and control and symptoms

of depression and anxiety. Significant positive correlations were found between symptom scores and control scales, as were significant negative correlations found between symptoms and care scales, as anticipated and in the expected directions. Rodgers argued that the study's findings support the view that parental style can have a causal impact upon adult depression. He stressed that some subjects studied were known to have high adult symptom levels but did not rate their parents poorly on the PBI. This finding is important because the significance of a relationship between PBI scores and adult depression, is dependent upon actual perceptions of past events not the consequence of a present negative affect. This finding is consistent with other evidence that suggests current depressed mood does not necessarily render a bias in retrospective assessments[14,19].

Kendler, Kessler, Neale, Heath, Phil & Eaves[149] sought to develop an exploratory, integrated and causal model for predicting one year prevalence of depression in a population base sample of 680 female-female twin pairs. Subjects were assessed three times at greater than one year intervals. A number of predictor variables were considered, including that of "parental warmth". Parental warmth was assessed by averaging the scores given for mother and father by each twin pair on the care scale of the PBI. Other predictor variables included: genetic factors, childhood parental loss, life traumas, neuroticism, social support, history of major depression, recent difficulties and recent stressful life events. They found that the best fitting model accounted for 50.1% of the variance in the threat to major depression over two periods of one year assessments (best-fitting model determined by Akaike's information criterion, set 16 paths to 0 [X^2 = 10.57, df = 16]). Parental warmth was found only to have an 'intermediate' effect as a predictor variable (0.197). Recent stressful events was found to be the single most powerful risk factor for major depression in the model (0.388).

Genetic background was the second largest risk factor for major depression, and 60% of this effect was direct, while genetic factors also influenced the liability to major depression by indirect paths. Parker & Hadzi-Pavlovic[152] used the PBI on a sample of 65 melancholic and 84 non-melancholic depressed patients. It was thought that 'anomalous parenting' may be a differential risk factor relevant to non-melancholic depression but irrelevant to melancholia. They found evidence for this specificity, whereby non-melancholic depressives were significantly more likely to report anomalous parenting and low parental care compared to their matched controls. The BPI scores from melancholia depressives fail to indicate any increased chance of anomalous parenting. The authors also found evidence for additive and compensatory effects between the perceived parenting styles of both mother and father upon the risk for non-melancholic depression. If both parents were rated negatively (e.g., affectionless control, neglectful parenting) the risk was

increased considerably. On the other hand, if one parent was rated positively (e.g., optimal parenting) this was found to compensate somewhat for the poor effect provided by the other parent. In such instances, the risk to depression was decreased.

Parker[161] administered the PBI to 123 depressed subjects in a study examining the relationship between anomalous parenting, cognitive style, personality and depression. Subjects also completed a state depression questionnaire and a collection of personality measures. It was anticipated that a vulnerable cognitive style, as a diathesis to adult depression could be instigated through anomalous parenting. Personality factors were also thought to mediate the effects of vulnerable cognitions. Parker found that state depression levels were not significantly linked with PBI scale scores. When correlated, low parental care was significantly linked with high scores on the Dysfunctional Attitudes Scale (Form A) and low self-esteem scores. Parental over-protection was also linked significantly with low self-esteem. The results indicated that anomalous parenting (as measure by the PBI) particularly low care, did not directly influence subjects' mood state, but was significantly associated with a general dysfunctional attitude style and lower evaluations of the self.

Oakley-Brown et al.[171] gave the PBI to women with a recent major depression and women with no history of depression. Women with recent depression were more likely to describe adverse parenting than were controls. The authors identified low maternal care as a specific risk factor for depression in their sample of women. Lizard et al.[183] included the PBI in their study examining reports of childhood home environment in early-onset dysthymia (EOD) and episodic major depression (EMD). Their sample included 97 outpatients with EOD, 45 outpatients with EMD and 45 normal controls. EDO patients reported significantly poorer relationships with both parents (including physical and sexual abuse with lower parental care, and greater parental overprotection than normals. They also reported poorer overall relationships with parents than did EMD patients, particularly lower parental care. Patients with EMD reported greater childhood adversity than normals – specifically more reports of sexual abuse, high maternal overprotection and poorer relationships with their fathers than controls. The authors suggest that the quality of the early home environment may contribute to the differences in the clinical manifestation of EOD and EMD.

Mulder et al.[195] gave the PBI to a large sample of patients with major depression and 40 control subjects with no current mental disorder as part of their study into the influence of temperament and early environment on personality disorder in major depression. The depressed group, as compared to the controls, had significantly elevated 'harm avoidance'(HA) scores and also recalled receiving worse parental care. Patients with personality disorders had low 'reward dependence' (RD) scores and reported poorer parental care than the rest of the sample. They argued that the relationship between TPQ measures and parental care scores was largely

independent. They concluded that 'early adverse environmental factors'(as measured by the PBI) were relevant in determining whether temperamental traits had pathological expressions (although effects were not as strong as for temperament measures).

Sato et al.[196] gave the PBI to a sample of 51 Japanese depressed patients and 51 matched-control subjects. They found that low care scores and high protection scores were associated with having depression, and that this association was observed only in those patients with a non-melancholic symptom profile. They suggested that these results indicate that the specificity of anomalous parenting in non-melancholic depression (observed in Western samples) may well be independent of cultural differences.

Parker et al.[205] developed a refined measure of dysfunctional parenting: measure of parental style (MOPS). This 21 – item self-report measure was developed, with items capturing (1) refined PBI-defined of care and control; (2) parental interactions inducing insecurity, guilt and failure; and (3) parental abuse and separation experiences.

In a study exploring the over-representation of dysfunctional parenting in non-melancholic depressions, Parker et al.[206] gave the PBI to a sample of 245 depressed in patients or outpatients. For different 'melancholia vs non-melancholia' definitions were used: 'Newcastle'; 'clinical diagnosis'; 'CORE' scores; and 'DSM-IV'. Non-melancholic patients were more likely to report low parental care and high parental protection, but this was limited to the 'clinical diagnosis' definition only (and significant only for mothers). Similarly, PBI scores for non-melancholic patients were more likely to place mothers in 'affectionless-control quadrant, again significant only in relation to the 'clinical diagnosis definition.

MIXED ANXIETY/DEPRESSION STUDIES

Alnaes[94] had the PBI completed by (DSM-III judged) 35 pure major depression (MDE), 36 mixed anxiety/major depression (DEPANX), 84 pure anxiety (ANX) and 97 other mental (mainly affective) disorders (OTHER). Paternal care lowest in the DEPANX and ANX. [Complicated table and discriminant analysis summarise]

AGORAPHOBIA

A controlled study of 41 English agoraphobic subjects[45] established lower maternal care scores, but no differences on the other three PBI scales for the agoraphobics. By comparison, a replication controlled study of Australian agoraphobics[46] established lower

care and higher protection PBI scores from both parents of the agoraphobics. The odds ratio of assigning a mother to the 'affectionless control' quadrant in the two studies was 3.3 and 3.8 respectively. In two separate studies,[47,48] using a different measure of parental style, the agoraphobics were also more likely to report maternal rejection and decrements in parental care, but no greater likelihood of parental overprotection, so that the PBI findings (at variance with clinical views imputing overprotection) may well be valid.

See study by Faravelli et al[85] above in clinical anxiety section. He examined whether differences reflected an agoraphobic component by correlating levels of agoraphobic symptoms in panic disorder patients with PBI scales and found no correlations.

SOCIAL PHOBIA

A controlled study of 40 English social phobic subjects[45] established significantly less care and greater protection from both parents in comparison to controls. A subsequent analysis[6] quantified the odds ratio of their exposure to 'affectionless control' as 4.7 for mothers, 4.0 for fathers and 9.0 for so assigning one or more. Thus, social phobics were effectively nine times more likely to report at least one of their parents as evidencing PBI-defined 'affectionless control'. The PBI findings were replicated in a Dutch study[48] using a different measure of parental style (the EMBU).

OBSESSIVE-COMPULSIVE DISORDER

Hafner[49] undertook a postal survey of an obsessive-compulsive neurosis support group, with 93 members (47% response rate) returning PBI and symptom data. Subsequent analyses focussed on 81 respondents whose symptoms met DSM-III-R criteria for obsessive-compulsive disorder. The subjects reported strikingly low maternal and paternal care scores (means being 18.9 and 16.5 respectively) and significantly raised maternal (18.6) and paternal (15.3) protection scores. Further analysis[104] showed that OCD patients (n=30) who reported the presence of anxiety symptoms in one or both parents described their mothers as significantly less caring.

In a further study, cavedo and Parker (1994) examined the relationship between perceived parental bonding and obsessionality using 344 non-clinical subjects. Subjects completed the PBI along with two measures of obsessionality; the Maudsley Obsessional-Complusive Inventory (MOC) and the Leyton Obsessionality Inventory (LOI). The authors found that higher PBI protection scores were linked with higher scores on both the

obessionality mesures. Both maternal and paternal high protection scores were linked with higher obsessionality scores for female subjects, but only high paternal preotection scores were linked with higher obsessionality scores for male subjects. Links with PBI care scale scores were however less clear.

GENETIC STUDIES

Mackinnon et al[89] undertook a five-way study of 462 twin pairs, measures including the EPI, the DSSI anxiety and depression scales, and the 12-item GHQ on each occasion, and the PBI and ISSI on the first. PBI scores were correlated (care negative and op positive) with the 'level' of each of the four variables (but less clearly with the 'lability' of the variable, ie after controlling for the level). General conclusions: variablity in neuroticism, anxiety and depression did not appear to have a genetic base - but under environmental influence, with lability related only to life events. Genetic explanation clearest for the level of variables.

Kendler[198] examined factors associated with anomalous parenting from a genetic-epidemiological perspective. He administered a 16-item version of the PBI to 4 different samples. This version was created in order for parents to rate their own parenting. Samples were (1) fathers and mothers reporting on the parenting they provided for their own twin offspring; (2) twins reporting on the parenting they received; (3) on e twin reporting on the parenting received by the other twin; and (4) twins reporting on the parenting they have provided for their own offspring. The level of care or warmth offered to or perceived by a child will be influenced by familial patterns of 'caring' which might be independent of any genetic similarity; parental temperament, and characteristics of children (also genetically influenced). Levels of parental overprotection and authoritarianism seem to be less likely influenced by genetic factors in the parent but more likely influenced and learned from the parent's family of origin (which includes the influence of social and religious attitudes).

ABNORMAL ILLNESS BEHAVIOUR

The extent to which PBI scores might relate to such a characteristic (which may or may not relate to neuroticism) has been examined in two studies. In a study of 100 consecutive general practice attenders,50 simple correlations suggested that the more hypochondriacal subjects scored their fathers as more protective. In a subsequent analysis[6] examining PBI quadrant assignment, there was a trend for the more hypochondriacal subjects to be more likely to assign their mothers to the 'affectionate constraint' (high care-high protection) quadrant.

Baker and Merskey[51] reported a Canadian study of 20 hypochondriacal psychiatric patients, compared with matched psychiatric controls. Differences in parental care were not established or suggested, but the hypochondriacal groups did score their mothers as significantly more protective (82% higher), with a similar trend (35%) for fathers. Such similar findings, suggesting overprotection but no decrement of care, are then in contrast with findings from most neurotic groups.

Bridges, Goldberg, Evans and Sharpe[122] identified a group of 47 somatizers, 55 psychologisers and 91 controls (who were experiencing similiar symptoms to somatizers) from a large sample of patients attending 15 medical practices in the Greater Manchester area. Subjects were interviewed on two occasions and completed a self-report package which contained the PBI-maternal scale. Somatizers and Psychologisers reported their mothers as being significantly less caring and more overprotective than controls. No difference was found between somatizers and psychologisers. Further, close to half of the somatizers (48%) and psychologisers (53%) compared to a smaller number of controls (25%) categorise parental care in the 'affectionless control' quadrant. Controls (41%), on the other hand, tended to more often describe their parental care as 'optimal' compared to somatizers (36%) and psychologisers (25%).

ADOLESCENT DELINQUENCY

NON CLINICAL GROUPS:- Mak[115] got 793 8th to 12th grade students (405 males, 388 females) from government schools in Canberra complete a questionnaire package which included the PBI. Total parental bonding score was significantly negatively correlated with all the marginally deviant and seriously delinquent behaviours measured by the Delinquency Scale for females, and with only the more serious delinquent behaviours for males. A small (1%) but significant interaction effect of emotional empathy as measured by the Eysenck and Eysenck Empathy Scale and parental bonding was found to contribute to the explanation of delinquency. Neither variable correlated with delinquency independent of other variables.

Rey and Plapp[114] compared PBI scores for adolescents who had received a single DSM-III-R Axis I diagnosis of Oppositional disorder (n=49) or Conduct Disorder (n=62) with matched normal controls (n=763). Adolescents with a diagnosis of oppositional disorder and conduct disorder perceived their parents as significantly less caring, and more overprotective than did normal adolescents. There was no difference between the two

clinical groups in their perception of parents. Further, normal adolescents reported "optimal bonding" twice as often as did the adolescents from the two clinical groups. The latter did not differ, with half the cases reporting "affectionless control".

In a study by Fromuth, Burkhart & Jones[153], two samples of male students (n=253 & n=329) were administered a series of questionnaires to examine the incidence and nature of adolescent child sexual abuse offenders within a non-clinical college population. Subjects were asked about their complete sexual history; including their own sexual victimisation, information about sexual partners or victims, and sexual activities. Subjects completed the PBI as well as a number of other measures: the parental support scale, the sexual punitiveness scale, the 90-item Hopkins symptom check-list, the Beck depression inventory-short form, Rosenberg's self-esteem scale, the hostility toward women scale, the acceptance of interpersonal violence scale, the rape myth acceptance scale and the adversarial sexual beliefs scale.

Sixteen (3%) of the 582 subjects met the criteria for perpetrator of child sexual abuse. Subjects reported being 16 or 17 years-old when the offences occurred and all 16 reported up to 3 offender-victim meetings. Of the 21 victims counted, 14 were female and age of victim ranged from 3 to 12 years-old. Ratings made on the PBI did not differ significantly between molesters and non-molesters, and this was also the case for other social/relationship measures. Seven of the 16 molesters met the criteria for having been sexual molested themselves as children.

Mak[168] also examined the relationship between adolescent delinquency and perceived parental care and over-protection. Seven-hundred and ninety-three Australian school students (405 males and 387 females)with a mean age of 15.6 years participated as subjects in the study. Subjects completed Mak's (1993)Australian Self-Report Delinquency Scale (that provides a measure of the variety of delinquent activities in which the respondent participated in the last year. They also completed the PBI and measure of the subjects' socioeconomic background. Delinquency for both males and females was significantly associated with lower maternal and paternal care and higher maternal and maternal and paternal protection scores. The four PI quadrants or parenting styles groups differed significantly in levels of delinquent involvement. The author found that the affectionless control group reported significantly more delinquency than the optimal bonding group; supporting the argument that combined parental neglect and over-protection can be detrimental. The results of a stepwise multiple regression analysis shows low maternal care to be the largest predictor variable of adolescent delinquency. The other significant variables (in decreasing order) included: being male, coming from a broken home, low

paternal care and having a less educated father. Mak also observed a significant interaction effect, whereby the combination of low paternal care and high paternal protection among males was associated with higher levels of delinquent involvement.

CLINICAL GROUPS:-In a study of institutionalised male adolescent delinquents, Howard[38] compared the relevance of a broken home and PBI scores to manifestations and severity of sociopathy, and established that low maternal care was the best predictor on three of the four outcome measures - 'social maladjustment' (7.9% of the variance), 'value orientation' (15.8%) and 'alienation' (20.5%); and that maternal overprotection was of most significance for the variable 'manifest aggression' (15.7%). Simple correlations suggested that severity on all sociopathy sub-scales was associated with low parental care and higher parental protection, while the independent effect of a broken home appeared non-significant. Sub-group analyses established that the 'persistent offenders' scored their mothers as less caring than the 'first committal' youths. Howard suggested that the data argued for the greater importance of distorted parent-child relationships than a broken home (or disrupted bonding) per se to antisocial behaviour.

SCHIZOPHRENIA

As the concept of the 'schizophrenogenic' parent imputes characteristics of an overprotective but basically rejecting parent, and as the PBI assesses characteristics akin to those intrinsic to the British concept[52] of high 'expressed emotion' or EE (low PBI care equating with EE critical comments, and high PBI protection equating with EE over-involvement), the PBI suggests itself for assessing the relevance of parental style to the onset and course of schizophrenic disorder. As noted earlier, Kazarian[7] has confirmed the factorial structure of the PBI scales within a sample of schizophrenic patients, suggesting the centrality of such parental dimensions to schizophrenic subjects. Cole and Kazarian (1988) (78) modified the PBI to form the Influential Relationships Questionnaire (IRQ) and intercorrelated scores with their newly developed self-report measure of EE, called the Level of Expressed Emotion (LEE) scale and, in a sample of schizophrenic patients, the overall correlation was 0.86, suggesting indirectly a link between PBI and EE constructs. In a subsequent study[111] 15 patients with a DSM-III diagnosis of schizophrenia either currently in hospital or who had been hospitalised in the last 12 months completed the LEE and IRQ rating their relatives, with whom they had been living over the last 3 months. The patients relatives (n=23, of which 56% mothers, 35% fathers and 9% spouses) were administered the Camberwell Family Interview (CPI), following which they completed the IRQ and LEE, rating their own behaviour/attitudes towards the patient over the last 3

months. While there was a significant association between the subscales from both the Relative Version and the Patient Version of the LEE and the Warmth and Critical comments scales of the CPI. There was no association between the Relative Version of the IRQ and the CPI (r=.08 to .30). In addition, most of the scores of the Patient Version of the IRQ were not associated with the CPI ratings (r=-.09 to .33), except for a significant correlation between the IRQ Criticism Scale and the CFI Emotional Overprotection Scale (r=.48) and a trend towards significance between the IRQ Overprotection scale and the CFI Emotional Overinvolvement ratings (r=.39).

The first study[16] had a sample of schizophrenic subjects complete the PBI shortly after hospital admission and subsequently when judged clinically to have improved significantly. On both occasions, their PBI scores suggested lower parental care and higher paternal protection than matched non-clinical controls. The patients were less likely to assign their parents to the 'optimal bonding' quadrant, and more likely to assign them to the 'affectionless control' quadrant, although this was significant only for fathers (the odds ratio for assigning one or more parents to the latter quadrant being 2.1). Age at initial hospitalization was associated with PBI scores, so that assigning one or both parent to the 'affectionless control' quadrant was associated with the initial hospital admission being advanced 5-6 years. Such a link between parental style and age at initial hospitalization had not been previously reported in relation to any measure of parental style. For those in contact with their parent after discharge, their chance of readmission over the next 9 months was 75% if they assigned a parent to the 'affectionless control'quadrant, against 25% for the remainder, a significant difference. A subsequent paper[53] examined the predictive potential of the PBI after varying the cut-off scores, and established an overall diagnostic power of 69% for mothers, 64% for fathers and 73% for the more anomalous parent, in comparison to a calculated 71% on published data for the British EE measure assessing overall household style.

A replication study[54] required recently admitted patients with schizophrenia (and living with their parents) to complete the orthodox PBI and a "state" version of the PBI (assessing parental characteristics in the three months preceding admission). Compared to matched general practice controls, the patients tended to report less parental care and more parental protection, but the differences were significant only in relation to fathers. The patients were significantly more likely (50% vs 26%) to assign their fathers to the 'affectionless control' PBI quadrant, but trends to so score their mothers or one or more parent to that quadrant were not significant. In comparison to the previous study, there was no relation between PBI scores and age at initial hospitalization (which tended to be about a year after onset of the disorder). In the nine months after discharge, approximately half the

subjects were readmitted and/or relapsed on a measure of psychiatric 'caseness'. The orthodox PBI form showed a weak trend to predict relapse, with paternal care scores being lower and protection scores being higher in the relapsers, and with the latter being somewhat more likely (53% vs 40%) to report paternal 'affectionless control'. Such trends were not significant until the PBI cut-off scale scores were recalibrated, when 65% of the relapsers and 28% of the non-relapsers reported dysfunctional parenting. The 'state' version of the PBI was not suggested as a predictor of relapse.

Baker[55] undertook a combined retrospective/prospective study using the PBI as a state measure of parental style, as well as a modified version of the PBI (called the Influential Relationships Questionnaire or IRQ, assessing care, overprotection and criticism effected by the two most influential people in their lives over the last 18 months). The retrospective component compared those admitted to hospital ('relapsers') over the preceding 18 months with 'non-relapsers'. While the PBI failed to discriminate the two groups, the relapsers were discriminated by scoring both their influential nominees as both more caring and as more critical. The prospective study examined the capacity of the PBI and IRQ to predict the likelihood of the outpatients being admitted to hospital. While only 8 subjects were readmitted over the next 9 months, the readmitted subjects differed in scoring their mothers as significantly more caring on the PBI, and scoring (on the IRQ) their most influential nominee as more critical, and the second nominee significantly differently on the care, overprotection and criticism scales (although the directions of those differences were not indicated). The differential findings for the PBI and IRQ measures may reflect method variance, in that the former rated mothers and fathers, while the latter rated nominated influential parent-figures. The researchers established that assignment of a parent to the 'affectionless control' quadrant was actually a significant predictor of not being readmitted, opposite to the previous study. They did, however, confirm a link between parental style and age at first admission, with assignment of a parent to the 'affectionless control' quadrant predicting a younger age at first admission.

In a second study,[56] the Canadian researchers contrasted 21 readmitted and 28 non-readmitted schizophrenic patients, with patients completing the IRQ (the modified PBI questionnaire) at hospital discharge. The capacity of the IRQ to predict readmission was demonstrated for the 'second most influential' parent, with readmitted subjects scoring that parent as less caring, more protective and more critical.

Warner and Atkinson[17] studied the course of illness retrospectively over one year and had 62 schizophrenic patients attending a community mental health centre complete the PBI when their mental state was close to their best level of functioning. The

researchers calculated a 'PBI difference' score (essentially the care score minus the protection score) and subsequently labelled the sub-groups as 'high risk' (low care or high protection) and 'low risk' (high care or low protection). No relationship was found between PBI scores and initial age of onset of schizophrenia. However, PBI scores were strongly predictive of course of illness (or relapse) and most clearly for those in frequent contact with 'high risk' parents. Assignment of two parents to the high-risk category was associated with an even stronger effect on admission rate and duration of hospitalization. By themselves, PBI scores were strongly predictive of outcome but, when combined with current age, age at onset of illness and medication compliance, prediction of outcome, increased further, ranging from 73-100% against various outcome criteria.

Hafner and Miller[110] conducted a 12 month prospective study investigating the frequency and duration of readmissions to hospital amongst schizophrenics. Eighteen patients with a DSM-III-R diagnosis of schizophrenia, between the ages of 18 and 45 years and currently living with their parents, were rated on a number of scales and also asked to complete a range of questionnaires measuring family interaction (including the PBI). The patients parents also completed some of these questionnaires. Patients rated their mothers as significantly higher than normal on protection (M=19.6, SD=9.9). Further, the 10 patients who were readmitted to hospital during the follow-up year rated their mothers as significantly lower on the protection scale and higher on the care scale than the 8 patients who were not readmitted. When restricted to the 12 least chronic patients (first hospital admission less than two years before the index admission) patients maternal protection score was significantly associated with the number of days spent in hospital after the index admission (r=-.67). However, even though patients ratings of maternal protection and care predicted relapse, the ratings were in the opposite direction to those reported by Parker and Mayer (1986). The authors conclude that it is unclear whether the above results may have been influenced by sex or chronicity, given the present sample was predominately male and more chronically ill

Byrne et al[87] had 14 subjects with schizophrenia complete the PBI (then compared against patients with borderline personality and published PBI data). Mean care scores for the schizophrenic subjects were 22.8 (mother) and 22.5 (father), and overprotection were 16.1 (mother) and 11.1 (father). The authors suggested that the subjects differed only (against normal controls) in having lower paternal care scores.

Onstad, Skre, Torgerson & Kringlen[158] administered the PBI to 12 monozygotic and dizygotic same-sexed twin pairs discordent for DSM-III-R schizophrenia. For each twin pair the twin diagnosed with schizophrenia was compared with his or her non-schizophrenic co-

twin. A main effect for schizophrenia on PBI scores showed that schizophrenic subjects reported less care and more protection than there co-twins.

In a study by Lebell et al[167] the PBI and the Dyadic Adjustment Scale (DAS) were modified to encompass patients' perceptions of all relatives, not only parental or marital. Thirty-nine male out-patients of a research clinic who fulfilled DSM-111-R criteria for schizophrenic disorder, completed the PBI and the DAS. Twenty-four of the patients experienced an exacerbation of symptoms within one year. The authors found that, patients with more positive perceptions of their relatives had significantly better outcomes (i.e., a lower rate of psychiatric exacerbation) at a one year follow-up. This was the case particularly when there was a high amount of contact with key relatives. These findings are consistent with the view that schizophrenic patient's perceptions of there family environment can predict relapse. The authors suggest that in some instances, the family may provide some protection against exacerbation of symptoms.

Helgeland et al[188] assessed maternal perceptions, using the PBI, with 19 subjects with schizophrenia, 14 subjects with BPD and 15 non-clinica; subjects. The schizophrenic group reported their mothers a less caring and more overprotective than did the non-clinical group. Although a similar trend was observed, there was no statistically significant difference between the schizophrenia group and the BPD group. Thus representations or perceptions of `negative mothering' were not specific to the schizophrenia group. Even so, these authors argued that a maternal style characterised by high overprotection and low care may be a "contributing factor to the development of schizophrenia in individuals with a specific premorbid vulnerability which may magnify any impact of negative mothering"(p.42).

PERSONALITY DISORDER

AVOIDANT: Stravynski et al (1989) (79) compared 15 out-patients (8 women and 7 men) of a Montreal hospital diagnosed as APD in "terms of DSM-III", and a control group of hospital employees matched on age, sex and social class. The APD subjects scored their parents as less caring (16.5 vs 23.7) but no differently on protection.

BORDERLINE: Paris and Frank (1989)[80] defined borderline (n = 18) and non-borderline (n = 29)groups from a sample of female university students in psychotherapy, using a diagnostic scale. The former scored their mothers as significantly less caring (19.2 vs 25.2) but this was not significant for fathers (18.0 vs 22.4). Both groups scored mothers and fathers similarly on the protection scale. In another study, Zweing-Frank and Paris[112]

identified a borderline (n=62) and non-borderline (n=99) group from subjects in a university student mental health centre and general hospital outpatient psychiatry clinic who had completed a diagnostic scale. The borderline patients scored both mothers and father as significantly less caring. Post hoc analysis for any interaction effects revealed that male patients perceived their mothers as significantly more caring than fathers. The borderline patients also score both parents as more protective than non borderline patients. Although non-significant, borderline patients tended to perceive their mothers as more protective than fathers. Protection scores for the non-borderline patients were similiar to community norms (Parker, 1983), while for borderline patients they were much higher.

Byrne et al[87] compared scores of 15 subjects meeting DSM-III criteria for borderline PD against normative data. Mean care scores were 16.3 (mothers) and 14.7 (fathers), and overprotection 18.8 (mothers) and 19.1 (fathers), all comparisons for care and OP being significant.

PERSONALITY DISORDERS GENERALLY:

163 general hospital outpatients of the 251 successive patients approached who agreed to participate in the study[113] were classified through chart review as either meeting criteria for an Axis II DSM-III-R diagnosis of personality disorder cluster A (n=7), cluster B (n=60), cluster C (n=42), or as other (n=54, met criteria for "personality disorder not otherwise specified" or for no Axis II diagnosis). All patients received 2 GAF scores (present and highest in 12 months) and were required to complete the PBI. Patients rated their parents as more caring and less protective as one proceeded from cluster A to B to C to O. This finding was significant for maternal care and protection scores and also for paternal care, with a trend towards significance for paternal protection. Mean PBI maternal and paternal ratings for patients from Cluster C and O were close to reported PBI community norms. Further, 40.3% of patients were correctly classified into clusters using PBI scores. However, PBI did not predict GAF scores.

Torgersen and Alnaes (1992) compared perceptions of parental behaviour in childhood (using the PBI) of subjects with and without personality disorders. Fifty-two patients with schizotypal and/or borderline personality disorder were compared with 165 patients with other personality disorders and 52 patients with no personality disorder. Maternal care, paternal care, maternal protection and paternal protection were reported differently in the various patient groups. Overall, maternal care was the best variable to discriminate borderlines and schizotypals from other patients; while maternal protection also discriminated schizotyples from borderlines. Schizotypals and borderlines repoted low care,

schizotypals remembered the childhood experience of parental underprotection and borderlines reported the experience of parental overprotection.

Nordahl et al. [180] gave the PBI to 135 psychiatric patients and 41 normal controls. Obsessive-compulsive personality disorder (PD) was associated with lower levels of paternal care and higher levels of paternal overprotection. Cluster B PDs were associated with high parental overprotection. Avoidant, dependent and cluster A disorders were not associated with reports of aberrant parental bonding. When controlled for, lifetime major depression was associated with reports of low maternal care and high maternal overprotection.

Modestin et al. [181] studied the role of childhood traumatic events and parental bonding as influences upon adult personality disorder. They found significant sex differences. High control and low care (paternal) were significantly correlated with PD pathology in males in particular. This was observed for all cluster types, especially cluster B. Maternal bonding appeared to play a weaker role. The authors suggest that their results indicate the possibility of different origins of PD pathology for men and women. They highlighted the importance of the quality of paternal parenting for PDs in males. However, in multivariate analyses no exclusive relationship between possible PD antecedents and PD pathology for females could be identified.

Paris et al. [187] gave the PBI to a group of male subjects as part of their investigation into psychological factors associated with homosexuality and borderline disorder (BPD). They found that homosexual subjects with BPD (as compared to heterosexuals) had significantly higher rates of childhood sexual abuse (including father-son incest) and also reported lower maternal care and higher maternal and paternal control.

Kooiman and Spinhoven [240] studied 41 homosexual males infected with HIV to investigate whether those with personality disorders (n=25) differed from those with no personality disorder on the PBI and other variables (defense mechanisms, ability to form adult attachments). There were no group differences in care and control scores.

Truant [211] studied the relationship between personality disorders, childhood care and adult marital quality. The study sample comprised 98 psychiatric inpatients or outpatient. The author found little direct correlation between childhood care and adult marital quality. Married patients with personality disorders (most of whom also had Axis I disorder), did report lower levels of both childhood care and adult marital quality compared with Axis I diagnosis patients with no personality disorder.

ANOMALOUS SEXUAL CHARACTERISTICS

A controlled study[57] of 30 male-to-female transsexuals established significantly less care and greater protection from fathers. The odds ratio of transsexuals assigning their fathers to the 'affectionless control' quadrant was 4.7, a markedly high risk.[6] Sexton[58] sought to assess the effects of divorce on any relationship between parental bonding and sex role identification. Three hundred and sixty nine male university students (aged 24-40 years) returned PBI and other data, including a questionnaire which generated sex role identification scores. The authors interpreted their data as indicating that "androgynous individuals from intact homes had high levels of care and low levels of overprotection from both parents". By contrast, "undifferentiated individuals" not exposed to divorce reported low levels of parental care (especially paternal) and somewhat increased parental protection. "Feminine men" from intact homes reported "high levels of maternal overprotection" but this difference was not formally significant. Lower levels of care and protection were reported for those experiencing divorce from whichever assigned group.

Todd and Gynther[117] investigated the relationship between MMPI masculinity-femininity (Mf) scale and a range of behavioural variables. 52 female and 51 male university students were asked to complete the first 399 items of the MMPI, the PBI and other questionnaires. No relationship was found between ratings of maternal care and protection and Mf score for either male or female students. However, f or male students, a lower Mf score was significantly associated with a higher score of paternal care (r= -.28)

SUICIDE ATTEMPTS

While suicidal attempts are generally regarded as driven by recent life stressors, the possibility that early developmental factors may create a diathesis to later suicide is held by many theorists. Goldney[59] studied 43 young women who had attempted suicide by drug overdose and had been hospitalized. Compared to matched non-clinical controls, subjects scored their parents as significantly less caring and significantly more protective.

Silove[60] undertook a replication study of 43 (23 female, 20 male) subjects, matched with general practice controls denying suicide attempts. Trends for the parasuicide group to report their parents as less caring and more protective were non-significant except for paternal protection, and the authors judged (after undertaking a multiple regression analysis) that the failure to replicate may have emerged from differences in gender and social class (but not age). The authors noted

that their parasuicidal subjects were more likely than controls to report a sequence of exposure to PBI-defined 'affectionless control' and a recent stress in a close relationship.

Adam et al.[173] gave the PBI to a group of male and female adolescents with a wide range of psychological problems to assess the relationship between perceptions of parenting and suicidal behaviours. Subjects were questioned concerning several aspects of suicidality and assigned to one of four groups: suicidal ideation, single attempt, multiple suicide attempts, and a control group. Suicidal subjects reported lower care and higher over-protection for mothers (females also reporting this for fathers) than subjects with no suicidal ideation. They reported that higher 'affectionless control' was more common in suicidal subjects, particularly for female subjects with maternal influences being stronger than paternal influences.

Beautrais et al.[173] assessed a variety of risk factors for serious suicide attempts among 13 to 24 year olds. They found that the risk of making a medically serious suicide attempt was increased with the extent of exposure to childhood adversity as well as other factors such as social disadvantage and psychiatric morbidity. Subjects who had made such an attempt were more likely than controls to report lower parental care scores and higher scores for parental control. Martin et al.[190] recommend the use of the PBI in early detection studies of adolescent suicide. In their study into parental bonding and vulnerability to adolescent suicide, they acknowledged family discord as a non-traditional but potentially important marker of adolescents at risk. Adolescents who assigned their parents to the 'affectionless control' quadrant were substantially more likely to practice deliberate self-harm, be depressed and have thoughts of carrying out suicide.

SPECIFYING WHETHER A DISORDER IS PRIMARILY NEUROTIC OR NOT

As patients with a number of psychiatric disorders (and particularly those who have neurotic disorders) have tended to score the PBI in a characteristic way that differs from those without a primary psychological disorder, several investigators have used PBI data to explore whether a disorder is primarily psychological or not. The limits and risks of such a logic do not need to be explored here, but certainly major limitations must be conceded.

Salter[61] studied 104 patients with tempero-mandibular pain and dysfunction syndrome (TMPDS), with control data generated from patients having facial pain due to recognised organic disorders, those with undiagnosed facial pain disorders, and from published PBI studies of neurotic and non-clinical groups. Those with TMPDS returned PBI scores approximating to non-clinical groups and not corresponding to neurotic groups, and such findings encouraged the authors to question whether TMPDS is primarily

psychological in origin. By contrast, those with undiagnosed facial pain tended to show the most abnormal scoring on all the psychological tests, and the authors judged this to be a consequence of the group containing more psychologically ill patients. A subsequent report[62] by this research group established that PBI scores failed to predict outcome for those with the syndrome.

Merskey[63] assessed 103 patients referred to a neurological outpatient clinic with persistent headache (not caused by significant physical illness) and emotional disturbance. They concluded that their sample showed more evidence of emotional disturbance than a general practice population but less than psychiatric outpatients. They concluded that the "PBI does not identify the headache population as having more antecedent disturbance than a general practice population".

Ginzburg et al (1988) (76) had 328 patients with chronic pain complete the PBI and then found no significant correlation between the surface area affected by pain and the PBI scales. Gamsa[96] (from Montreal) contrasted PBI scores returned by 163 chronic pain patients with 81 control subjects. Only difference was for pain patients to report less paternal care - which author notes but is unable to explain. By contrast, Tauschke et al[97] (from Ontario) contrasted PBI scores returned by 58 chronic pain patients with 56 controls from a psychiatric out-patients clinic (lower response rate from the latter) - and compared each against Sydney PBI data, not with each other. The pain patients reported less maternal care only.

Andrews[64] compared PBI scores returned by 50 stutterers with 50 matched controls and found no significant differences. Maternal 'affectionless control' was reported by 33% of the patients and 29% of the controls (giving an odds ratio of 1.2), and such a paternal characteristic by 32% of the patients and 27% of the controls (1.3 odds ratio), establishing no increased risk of such a parental style in stutterers.

ANOREXIA NERVOSA

Gomez[65] compared PBI scores for 10 patients so diagnosed, and compared their scores with controls selected from staff at a technical college and their relatives, with the patients scoring their mothers as significantly less caring and significantly overprotective, while fathers in the two groups were scored similarly.

Palmer[66] compared PBI scores for 35 English anorexia nervosa patients with published Australian normative data, and suggested that the anorexic patients reported

significantly less maternal care. As differences were not distinctive and as the subjects and controls were not strictly matched, such a result should be treated with some caution.

See 1990 study by Calam et al[9] below.

Russell, Kopec-Schader, Rey and Beumont[154] administered the PBI to three groups of adolescents: (1) 54 anorexia nervosa patients (2) matched normals and (3) those referred for psychiatric assessment without anorectic symptoms. They found that the anorexia patients rated their mother and father as more caring and less overprotective than the nonanorectic referred group. Anorexia patients rated their mothers and fathers similarly to the nonclinical control group on both the care and protection scales. Overall, this study found that anorexia patients were significantly more likely to describe their parents as 'optimal' than the other referred group, and interestingly this group of anorexia patients did not differ significantly from the nonclinical subject group.

In a study by Fichter, Quadflieg & Brandl[155] patients with binge eating disorder (BED)(n=22), bulimia nervosa (BN)(n=22) and obesity (n=16) were administered the PBI as part of an investigation into recurrent overeating. Sixty-eight BED patients were also assessed longitudinally during inpatient treatment and at a 3 year follow-up. The authors found that BED patients had significantly higher scores in the control subscale of the PBI for their mothers only than patients with BN. There were no differences in scores between the BN and obesity groups and the BED and obesity groups. Furthermore, there was no significant difference among groups regarding control by fathers, care by mothers and care by fathers.

BULIMIA

Gomez[65] compared PBI scores for 20 bulimia nervosa patients with data from 20 technical college staff and their relatives. The only significant difference was that the bulimics scored their fathers as less caring. Palmer[66] contrasted PBI scores for 37 bulimia patients with Australian general practice controls and reported significantly less maternal and paternal care in the bulimic patients, but no differences on the protection scale for either parent.

Pole et al (1988) (77) had 56 consecutive female outpatients at the University of Texas Health Science Center at Dallas Eating Disorders Unit, and 30 controls (graduate students or employees) complete the PBI. Mean ages of patients and controls were 22.5 and 24.9. Authors aggregated maternal and paternal PBI scale scores and established

that 75% of bulimics experienced low care compared to 47% of controls ($P < 0.01$). Separate examination of mothers and fathers established significnat less maternal care, and a trend for fathers. A discriminant function analysis established MC as the best predictor, POP the next and PC the third. After covarying for Beck-assessed depression, there was no effect on the earlier finding. "Optimal bonding" was reported by 5% of bulimics and 44% of controls.

Fichter and Noegel[95] studied 27 pairs of twins, without finding any differences between DZ and MZ twins. Maternal care cf controls (21.0 vs 30.0) and paternal care (17.2 vs 25.3) low, and protection high for mothers (19.1 vs 12.9) and fathers (15.8 vs 11.6). In a further study Kent & Clopton[156] examined the relationship between bulimia and various family variables for which they administered the PBI to 3 groups of subjects: (1) 24 subjects who met the DSM-III-R requirements for bulimia (2) 24 subclinical bulimics and (3) 24 symptom-free subjects. However contray to past investigations (Palmer [66] and Calam[91]), their results found no significant differences in ratings made on either PBI scale among the 3 groups.

Sullivan et al.[193] studied a sample of 114 women with bulimia nervosa to assess the correlates of disorder severity. Low parental care scores emerged as an independent correlate (as did other variables) in several of the severity models explored.

EATING DISORDERS GENERALLY

Steiger et al.[84] contrasted 58 women with eating disorders (15 with anorexia nervosa restrictor, 9 with binging, 13 who had had AN but now were binging, and 21 normal-weigh bingers) with 24 controls. As a group, the eating disordered patients rated fathers as much less caring than controls, and somewhat more protective with the binging group showing the greatest distinctions of low care, high protection (for both parents but significant only for fathers despite small numbers). Similar differences, albeit attenuated across other eating disorder groups, suggesting some "homogeneity". Additionally, the authors described "primitive defences" to be associated with low care-high protection, and suggest that "perceived or real empathic failures may promote reliance on primitive defenses and that parental overprotectioon can stifle the development of mature ones".

Calam et al.[91] contrasted 98 'eating disordered' and control women - former reported significantly less parental care and somewhat more protection (significant for fathers). When sub-groups formed (31 with anorexia nervosa, 34 with bulimia/anorexia nervosa, 33

with bulimia only) then lowest maternal care for pure bulimics, lowest paternal care for A/Bs, highest maternal OP for pure bulimics and highest paternal OP for Ans.

Twenty women with binge-eating disorder (BED) and 20 non-binge eating obese controls were studied by Fowler et al. [179]. They found that women with BED scored significantly lower than those without BED on the parental scale care and higher on the parental scale for both mother and father ratings. Seventy percent of BED womens' scores fell into the "affectionless control" quadrant compared to 15% of those without BED.

In an investigation into the social and psychological correlates of adolescent eating disorders in a Norwegian sample, Wichstrom[192] found that any possible influential effects of low parental care overcontrol became insignificantly when subjects level of `body satisfaction' was considered. Perceived obesity was the strongest and most superior predictor of having and eating disorder among a large group of possible variables.

Sordelli et al.[194] gave the PBI to a group of female subjects newly diagnosed as either having bulimia (n=26) or anorexia disorders. Bulimics scored both parents as high on care and high on overprotection, whereas anorexics scores both parents as high on care only. The authors interpret their results in light of differentiation in the description of their mothers and fathers; anorexic subjects tended to idealize both parents, whereas bulimic subjects did not.

Fichter and Quadflieg[199] examined the clinical course and two-year outcome of anorexic and bulimic adolescents (N=635). The PBI was administered when patients were admitted for intensive inpatient behavioural treatment. A parental climate of `affectionless control' (low care and high overcontrol) was identified by the bulimia group (particularly for fathers). However, anorexic PBI scores did not differ from those of normal adolescent samples. This may reflect a possible tendency for the anorexic adolescent to `idealise' family climate or parents, as has been illustrated in other studies.

Berger et al.[127] investigated the impact of a history of child abuse on the relationship between perceptions of parental bonding and eating disorders, with a sample of 52 female Japanese eating disorder outpatients. Care (maternal and protection (maternal and parental)scores were significantly lower for subjects who reported physical abuse, but not for those who reported sexual abuse – an unusual finding. The authors discuss discrepancies between their findings and other research in light of their specific sample, and the fact that only milder forms of sexual abuse were reported.

ALCOHOLISM AND DRUG DEPENDENCE

Gomez[65] compared PBI scores returned by 71 subjects referred for treatment of "alcohol-related problems" with control data returned by technical college staff and their relatives. Both male and female alcoholics scored both parents as less caring. Richman and Flaherty[68] studied drinking patterns in 153 first-year medical students. Low parental care, together with low social support and depressive mood, tended to be linked with heavier drinking patterns in men, while heavier drinking in women was significantly linked with higher levels of parental care and low depressive symptomatology, and the authors speculated that for such a select group of women drinking might "constitute a symbolic social activity signifying the overall successful adoption of previously male social roles".

Bernardi[67] studied 110 patients admitted to a detoxification unit in Sydney. Non-matched controls were derived from those attending general practices. In the final sample there were 70 narcotic addicts and 40 alcoholics. Addicts were more likely to score mothers and fathers above the mean on the PBI protection scale compared to the controls, and this effect was observed for alcoholics on the maternal protection scale. No differences on care scale. (Note authors do not report mean scores). Authors considered possible confounders. First, a family history of alcoholism was significantly associated with lower paternal care scores, and of alcohol abuse with lower maternal care and higher protection scores, but no links between FH of drug abuse and PBI scales. Second, depression was related to some PBI scale scores, and its effect illustrated in multivariate analyses. Thus, the authors considered that poor parenting might relate independently to both depression and drug dependence; or poor parenting may contribute to depression which leads to drug dependence; or poor parenting leads to drug abuse with depression a consequence.

Schweitzer and Lawton (1989) (69) studied 63 young adults with a history of opiate, or opiate and polydrug abuse (two-thirds male and mean age 26 years). Control data from clinical 50 psychology students. Quadrant assignment differed significantly for both parents, with optimal bonding being less likely and affectionless control more likely, the latter reported for 58% of the mothers and for 52% of the fathers. Overall the drug addicts scored parents as less caring (19.5 vs 25.9) and more protective (15.1 vs 10.9) than controls.

Richman and Flaherty[92] studied 184 medical students, gave the MAST to assess alcohol-related problems and the PBI. Higher MAST scores were trivially linked with lower maternal (.21 for men and .11) and paternal (.10 for men and .24 for women) care, and even less for overprotection.

Joyce et al.[175] gave the PBI to a group of alcohol dependent men from a treatment setting as well a group randomly selected from the community. Men from the treatment sample reported significantly less paternal and maternal care and more over-protection than men from the community sample without an alcohol disorder. Alcohol dependent men from the community sample reported essentially 'normal' relationships with both parents. However the presence of conduct disorder (but not alcohol disorder severity) for these men was associated with the reporting of poorer parenting. The authors suggest that if there is an association between poor parenting and alcohol dependence, it is more likely mediated by a link between parenting and childhood conduct disorder. They highlighted the role of conduct disorder as a salient risk factor for the development of alcohol abuse and dependence in adult males.

Rutherford et al.[176] gave the PBI to a sample of young men (mean age = 22) to assess their perceptions of parents based on familial history of alcoholism. The men with high familial risk for alcohol dependence rated their fathers as less caring than did those with low familial risk. Lower care ratings were also associated with higher alcohol consumption for their sample. This was also the case for low parental protection scores and high alcohol consumption.

STUDIES OF CHILDREN

Capelli et al (1988) studied a small group of boys (aged 7 or more) with cystic fibrosis and derived PBI scores for the parents - although they failed to describe how (?self-reports). Maternal overprotecion correlated with the number of behavioural problems (.47) using the Achenbach and Edelbrock Child Behavior Checklist (CBCL), and the authors note that the direction of the association (anxious mothers caused boys to behave abnormally, boys with behavioural problems cause more anxiety and overprotection in mothers) remained unclear. In a later paper (Capelli et al, 1989) (82), the authors describe having data from 29 children (18 males, 11 females, ages 7-18 years), matched (age and sex) with hospital medical controls. Parents asked to complete the PBI, and no differences were found between cystic fibrosis and other control parents on any PBI scale.

STUDIES OF ADOLESCENTS

Kashani[70] assessed a representative sample of school attendees, being 150 adolescents aged 14-16 years. Nineteen per cent were considered to have a psychiatric diagnosis, with that group scoring their parents as significantly less caring (correlation = -0.30) and non-significantly more protective (correlation = +0.16). Within the whole sample,

adolescents who rated their parents as caring were characterised by a "sociable, confident, serious-minded, rule-conscious personality profile". Adolescents who rated their parents as overprotective "were more inhibited, more sensitive and less confident (and had) more concern with self-concept, personal esteem, family rapport, and academic confidence".

In a large representative community sample of more than 2,000 adolescents, Cubis[5] examined PBI scores as predictors of psychosocial morbidity. In multivariate analyses, low paternal care was a significant predictor in five of the six analyses, predicting higher neuroticism, higher General Health Questionnaire scores, poorer body image, greater impulsivity and greater extraversion, but not the likelihood of professional consultation. A similar, but less distinct pattern of psychosocial morbidity, was associated with maternal protection.

Keddie[157] looked at the relationship between self-esteem, perceived maternal care and teenage pregnancy with a sample of 134 Jamaican schoolgirls and 108 pregnant adolesecents and teenage mothers aged 14 to 17 years. The author found that the pregnant teenagers perceived their mothers to have greater maternal care for them as compared to those girls who had recently become mothers themselves.

Kashani et al.[159] investigated the contributions of temperament, parental psychopathology and parental attitudes toward child and adolescent psychopathology.

They used a number of assessment instruments including the PBI. Thirty-seven (17.6%) of subjects met their criteria for a psychiatric disorder and 173 (82.4%) did not. The authors argued that children with a parent suffering from a psychiatric illness and certain temperament traits were more likely to suffer from a psychiatric disorder. The study also identified parental characteristics such as parental coldness, negativism and abuse from the mother and the father not fulfilling the child's emotional needs to be the best predictors of psychopathology in children.

Furukawa[160] administered the PBI (along with the Maudsley Personality Inventory and the General Health Questionnaire) to 130 female and 47 male Japanese adolescents prior to departing for a foreign exchange programme. In relation to the personality inventory and the PBI, they found that neuroticism correlated negatively with maternal care and positively with maternal overprotection. Overall, parental practices were found to influence personality features, but no direct significant relationship was observed between PBI scores and the General Health Questionnaire.

Furukawa and Shibayama (In press) conducted a study in which 188 Japanese students (who has spent one year in various countries) completed the Maudsley Personality Inventory, the PBI, the GHQ and the People in Your Life Scale (PIYL), prior to departing. Six months after arriving in the host community, they completed the GHQ and the relevant section of the PIYL a second time. The authors found that subjects reported significantly more psychiatric disturbances (at the second test period), less friends and acquaintances, and were less satisfied with such relationships in the host community than at home. Furukawa and Shibayama argued that after 6 months in a foreign culture, subjects manifested a significant deterioration in psychosocial adjustment.

Also see a further study by Furukawa and Shibayama (1993) with similar findings.

Short form PBI:

The Brief Current form of the PBI, (PBI-BC) was used to measure perceived parental style, examining for associations between parental bonding and, respectively, psychopathology and self concept measures.[130] The study[129,130] was based on a heterogeneous sample (in regard to sociodemographic variables, cultural and native language background, urban/rural dichotomy of the sampling) of 631 adolescents (414 girls and 217 boys). Arithmetic mean difference scores (care times minus rejection and control items minus autonomy) for the overall sample reflected perceptions of greater care than rejection, for both mothers and fathers (mean $\pm$SD 1.99 $\pm$1.88 and .72 $\pm$.72) and perception of greater autonomy, rather than overprotection (mean $\pm$SD -1.38 $\pm$1.92 and -1.74 $\pm$2.04). Results[130] suggested a stronger association between perceived paternal high control/low autonomy-giving and both psychopathology and self concept ratings. In contrast, maternal high control/low autonomy-giving bore a stronger association with measures of symptoms of psychopathology, but not self concept, whereas maternal high care/low rejection was associated with self concept, rather than psychopathology. These results differ from studies using the PBI, which have consistently suggested that maternal bonding is most strongly associated with psychopathology. Statistically significant correlations are of low magnitude (.09 to .16), so do not imply a causal role of parental bonding, but they do suggest there is a reliable relationship with self concept and clinical manifestation. The authors suggest that the heterogeniety of the sample may have contributed to the low correlations and that further analyses of specific subgroups may produce systematic variations in strength of correlations.

Pearce et al.[174] investigated the significance of ‘touch’ by parents on adolescents’ perceptions of parenting, psychological adjustment and suicidal behaviour. The authors found that, “differential quality and perceived quantity of positive and negative tough experiences are related to perceptions of parental care” (p. 166). They also noticed a gender difference whereby both ‘frequent negative contact’ and ‘infrequent positive contact’ appeared to be risk factors for

females (creating perceptions of low care), whereas males were much less affected by 'infrequent positive contact' but equally affected by 'frequent negative contact'.

Canetti et al. [178] examined the relationship between parental bonding and mental health in healthy adolescents, giving the PBI to 847 Israeli students. Adolescents who reported high care and low over-control (optimal bonding) reported less psychological distress. "Affectionless control" subjects had more psychological symptoms, less social support and a lesser feeling of well-being. The authors discuss specific configurations of parental bonding and links with distress and isolation.

Bachar et al. [178] examined the differential effects of war-versus accident related bereavement on the psychological wellbeing of 871 Israeli adolescents. They included the PBI in their study, however, no group differences in scores were observed. War-bereaved adolescents showed significantly lower scores in reported psychiatric symptoms. These differences are explained in light of differences in coping during bereavement based on 'type or nature' of death. The premise being that death in the context of meaning and purpose (i.e., war-related) is 'easier' to accept and rationalize than death which is seen as purposeless and purely accidental (i.e., road accidents).

Rey[212] investigated whether depressed adolescent patients perceived their parents as less caring and more controlling than patients with other diagnoses (as has been reported for adults). A number of disorders were compared. The author found that, when the effects of other variables were controlled, only adolescents with a major depressive disorder showed an association with low care (from mothers). Interestingly, there was no such association for dysthymic disorder.

Pedersen[213] gave a sample of 573 Norwegian adolescents a 20-item version of the PBI to examine the relationship between parental relations, mental health and delinquency. They found that both PBI care (low) and control (high) showed an association with anxiety and depression, as well as with delinquency.

Shams and Williams[214] compared the factors affecting health and well-being in two adolescent samples: (1) a British Asian sample (N=331) and 92) a non-Asian (primarily Scottish) sample. They used the PBI to identify differences in perceptions of parental bonds. British Asian adolescents perceived more parental overprotection than non-Asian adolescents. British Asian girls perceived less parental care than non-Asian girls. Overall, higher degrees of parental protection were associated with higher psychological distress.

CHILDHOOD SEXUAL ABUSE

The PBI has been used in studies investigating the relationship between childhood sexual abuse (CSA) and adult mental health. Much of the literature suggests that CSA is more likely to be experienced by children who have otherwise disrupted and disorganised home environments, making assumptions about direct causal links between CSA and later psychopathology difficult to address. The PBI has been used as one research tool in such enquiries.

Mullen et al.[184] gave the PBI to a random community sample of women and found that those with a history of CSA were 2.2 times more likely to rate both mothers and fathers as low carers and high controllers than those with no history of CSA. For women whose abuse involved intercourse, this figure rose to 4.2 (for maternal ratings only. In their investigation into CSA and self-esteem in adult women, Romans et al.[185] used the PBI in their assessment of early parental environment. For both the CSA and comparison groups, having an overprotective other was one of the variables (and the only parental relationship variable) independently linked to low self-esteem.

Gladstone et al.[202] used the PBI in a study examining early environment and other characteristics of depressed adult women who reported CSA. Patients with a history of CSA had significantly lower PBI care scores (for fathers only) compared tom patients with no history of CSA. However, no group difference was observed for overprotection scores.

OTHER

Tauschke et al[98] examined relationships between PBI scores and adult defence mechanisms in a sample of 114 (60 pain, and 41 OP clinic). No relationships were suggested with the overprotection scales. For care, there were negative associations with primitive defence. Parental care operates in a direction of reducing primitive and aggressive behaviour towards others.

Alder and Hayes[116] conducted a prospective study of 136 women between the ages of 18 and 30 years who were married or in stable de facto relationships and expecting their first child. The women completed a range of questionnaires, including PBI-maternal rating, initially and then again during the second trimester. Scores on the care and protection scale did not differ significantly from those reported by Sydney women assessed soon after giving birth (76). However, a strong relationship was found between mode of

delivery and the woman's ratings of their mother. Women who saw their mothers as less caring were more likely to have unassisted vaginal deliveries, and those who saw their mothers as overprotective were more likely to have their babies delivered by Caesarean section. Alder and Hayes postulate a possible reason for these results is that women who perceive their mothers as less caring have learned not to expect help when distressed so are less likely to request assistance during labour. While those women whose mothers were described as overprotective have learned to expect a rapid response to their distress.

Wallace and Gotlib[124] had 97 married couples expecting their first child complete a questionnaire package on three occasions, during the wife's pregnancy, and then at one month and six months postpartum. Stepwise multiple regression analysis revealed that the couple's perception of their own parent's caregiving (maternal and paternal care and overprotection) was not a significant predictor of marital adjustment (as measured by the Dyadic Adjustment Scale) six months after the birth of the first child.

In a study of courtship violence, Barnes et al[118] had 245 male university students complete PBI and other questionnaires. Of the 245 subjects, 202 had had a stable dating partner (3 or more dates in the past three years). Ratings of maternal and paternal care were combined with the Family of Origin Scale and not interpreted separately. A curvilinear relationship was found between parental overprotection and abuse. Higher courtship physical and emotional abuse was significantly associated with parental protection that was more extreme in either direction, that is, with parenting that was either overly protective or not protective enough. Heavy alcohol use by male subjects magnified this association.

Flannery and Richmond[123] investigated gender differences in the perception of social support, predictors and possible differential effects on psychopathology; 121 male and 61 female first year medical students completed a questionnaire package (containing the PBI) on two occasions, two weeks apart. No significant gender differences in social support were observed. However, there was a strong positive association between social support (as measured by a modified Social Support Network Inventory) and maternal affectivity (males=0.37, females=0.38). There was a smaller but still significant association between social support and paternal affectivity (males=0.19, females=0.24).

A study[133] based on 58 Jewish women, examining for 'intergenerational' effects of the Holocaust on engagement (parental 'bonding' to child and the adult child's reciprocal 'attachment' or 'differentiation' from parents) between female survivors and adult daughters, compared 19 daughters of Holocaust survivors, 19 daughters of European pre-World War II immigrants and 20 daughters of non-immigrants, whose ancestors had emigrated to

Australia, one to six generations ago. All women were first born, or eldest daughters, with ages for each group ranging from 25 to 40 years, and mean age ranging from 34.2 to 35.2 years. For the purposes of this study, 'protectiveness' was used to describe the 'protection/control' dimension, rather than the term 'overprotection', since the author was concerned that the latter conveyed connotations of "pathological forms of adaptation". The high-care/high-protection quadrant of the PBI, 'affectionate control', was termed 'indulgent', since the author felt that this term more appropriately described the quality of parental style of mothers who had lost their own parents in the Holocaust and feared further loss. Mothers of the three groups (Non-immigrant, Immigrant and Holocaust) were scored similarly on caring (means= 25.80, 26.84, and 24.00) and protectiveness (12.89, 13.37 and 18.42). The higher protectiveness score for the Holocaust group did not reach significance, due to the variability within groups, particularly the Holocaust group (SD= 8.66, 8.83 and 10.25). Assignment of mothers to PBI quadrants was not significantly different for groups, but there was a clear trend for the Holocaust group to be more likely than the others to assign mothers to the high-care/high-protection ('indulgent') quadrant (6 vs 3,3) and least likely to assign mothers to the low-care/high-control ('controlling') quadrant (2 vs 6,7). Although 'protectiveness' differences did not reach significance, the author argues that some Holocaust mothers were perceived as having been more protective than mothers in the other groups. Also, Holocaust mothers were significantly more likely to remain at home, during their daughter's childhood, suggesting (either relative employment status based on socio-economic conditions or) a "behavioural consequence of an overprotective attitude".

Kitamura and Suzuki (1993)[146] used a sample of Japanese adolescents to investigate the relationship between subjects perceived rearing experiences (measured by the PBI) and any minor psychiatric morbidity (measured by the General Health Questionnaire GHQ). The only significant relationship found existed between morbidity and maternal over-protection. Scores on the anxiety and insomnia subscales of the GHQ were significantly greater for those subjects who perceived their mothers as over-protective (as indicated by their scores on the maternal protection category).

Zazzaro et all.[186] examined the concurrent validity of the ‘Relationship with Father Inventory’, by administering it and the PBI in counterbalanced order to 846 adult college student (mean age=24yrs). The Relationship with Father Inventory’s ‘emotional attachment’ and ‘Coalition’ scores correlated significantly with the PBI’s Care and Protection scores, suggesting that these inventories measured similar constructs. The authors findings therefore supported the concurrent validity of the Relationship with father Inventory.

In an investigation into lion pain and haematuria syndrome (LPH), Lucas et al.[197] gave the PBI to 15 LPH patients and 10 patients with complicated renal stone disease (controls). LPH patients rated their fathers as significantly more caring then controls – no other statistically significant differences in PBI scores were found. The authors argue that LPH is similar to other somatoform complaints in terms of greater recall of childhood experiences of parental illness and tendency towards role-reversal, parental idealization, as well as other factors.

A study by Modestin et al.[207] assessed the presence of dissociative disorders in a sample of 207 psychiatric patients. Instruments used included the Dissociative Experiences Scale (DES) and the PBI. DES scores were significantly (but weakly) correlated with PBI scores in the expected directions. That is, negatively correlated with care scores and positively correlated with control scores.

Simmons et al.[215] conducted a random sample survey study involving 350 nursing students, in order to explore the relationship between `parental care' (PBI) the `caring climate' of nursing schools, and the `caring ability' of students. For the latter two constructs or attributes, appropriate standardized measured were employed (see paper). Students with either very high or very low PBI maternal care scores were found to be the most caring. However, the strongest predictor of students' current caring ability was the `caring climate' provided by nursing schools.

RESEARCH: EXAMINING CONTINUITY OF DEVELOPMENT

In the study[138] based on 99 primary school children and 102 adolescents, perceptions of parents were organised around two dimensions of support and control, but relevance and interpretation differed for the two age groups, with the 'support' dimension being the major one underlying primary school children's perceptions of the home environment, whereas 'control' is the major dimension underlying adolescents' perceptions.

While much PBI research offers support for the general developmental proposition that anomalous parenting (eg low care, overprotection) may dispose, in particular, to neurotic disorders in adulthood, it is unlikely that any such developmental diathesis is fixed and immutable. Vulnerability to disorder may be modified by a number of factors, while resilience is unlikely to be a fixed attribute, and readers are referred to a comprehensive

review of this issue by Rutter.[71] Several studies that have examined for links between PBI scores and later, potentially modifying social support levels, are worthy of noting.

Parker and Hadzi-Pavlovic[28] studied a select sample of 79 women whose mothers had died in the subjects' childhood, and whose fathers had remarried. As lack of care from fathers, step-mothers and husbands were most clearly associated with trait levels of depression, subsequent analyses examined the effect of levels of care and affection from those three figures. An important analysis failed to show significant links between subjects' scoring their husbands' level of affection and other PBI scores (apart from paternal care) suggesting, as earlier noted, that there was no general bias for subjects to score all relationships with a negative or positive bias. The link between paternal care and marital affection was interpreted as possibly reflecting a number of influences, including a bias to score care from males in a similar way or a tendency for women to marry men with care characteristics similar to their fathers. Subjects scoring all three figures (step-mothers, fathers and husbands) as 'uncaring' scored 77% higher on the depression measure, while those who scored their fathers and step-mothers as uncaring, but their husbands as 'caring', scored only 30% higher than those reporting all three relationships as caring. By contrast, those reporting fathers and step-mothers as caring, but their husband as 'uncaring', scored 55% higher than those reporting all relationships as caring. The importance of this study was in suggesting that any diathesis established by 'caring' or by 'uncaring' parenting may be significantly modified (but not entirely reversed) by the quality of the marital relationship and, presumably, by other factors that impinge on self-esteem and depression.

The extent to which links between PBI scale scores and adult interpersonal relationships might reflect a causal process, a response bias and/or a confounding effect has been considered earlier in the paper with a number of research studies being referenced.[22,28,30-33] See review by Parker et al (Am J Psychiatry 1992, no ref number yet) covering this field of research, and paper by Truant et al[93] in anxiety/depression section.

The prospective study[137] interviewed 3,262 43 year old adults, in examing for mediating risk factors (family disruption by early separation, personality, social support network, socio-economic factors, interpersonal and non-interpersonal life events) between early parenting and mental health in the adult. Correlations between PBI scales and PSF (psychiatric symptom frequency), for last twelve months, were low, but significant ($r=0.08$ to 0.16, $p<0.01$). This association was reflected in PBI scale means across levels of PSF. More meaningfully, it was accompanied by a trend for there to be a higher percentage of subjects with high PSF scores, who rated low care and high control, to high percentages

with low PSF who rated high care and low control. PBI (care and control) means across marital status groups favoured single (except for single men, who rated mothers high on control) and married, over separated/divorced or remarried. Women who reported more life events during the previous twelve months, rated parents low on care and high on control. For men, rating differences were significant for interpersonal events, but not for non-interpersonal events. Premarital pregnancy was significantly associated with low parental care and high control, for women, but for men with illigitimate children, or whose wife was pregnant before marriage, the only relevant PBI scale was *low* mother control. Unemployment during early career and frequent job change were associated with low father care, for men, and low care from both mother and father, for women. For both men and women, those with good social networks rated parents higher on care and lower on control. In multiple regression analyses, while care and control scores made significant independent contributions to PSF scores, for men, almost two-thirds of the variance was common to PBI scores, personality measures and social factors. For women, PBI scores failed to make significant independent contributions, with 88% of variance shared with biographical and social variables.

Evidence is suggested for the relative importance of parents and significant others, on interpersonal and intrapersonal conceptions, changing with developmental stages. Results from studies[131] suggest that for current relationships, in the adolescent age group, friends are more strongly associated with self perception than are parents. Although parents influence the development of children's working models, current relationships with friends may have the potential to modify self perceptions. Studies[131] based on 56 male and 74 female students from introductory psychology classes, evaluated the relationship of the level of perceived social support and peoples' working models of self and others. Students completed the Social Support Questionnaire (SSQ) to assess perceived availability of social support (number and satisfaction); the Loneliness Scale of the UCLA; Shyness Scale of the Social Reticence Scale II, both for themselves ('actual' student) and for a 'typical' student; positive and negative scales of the Self Concepts Questionnaire (SCQ); PBI to assess quality of early attachments; Quality Relationships Index (QRI) for current relationships (for mother, father and a friend). In general, students' perceptions of both self and 'typical' students were significantly associated with quality of early parental relationships. 'Actual' student scales (SSQ Number, SSQ Satisfaction, Loneliness and Shyness) had significantly larger correlations with PBI care scales (MC: .17 ns, .27**, -.26**,-.26**; FC: .26**, .39**, -.40***, -.34***) than did the 'typical' students (MC:.16 ns, .10 ns, -.16 ns, -.24**; FC: .21*, .33***, -.35***, -.14 ns), but no differences between them on the overprotection scales ('Actual': MO: -.30***, -.19*, .18*, .19 ns; PO: -.27**, -.17 ns, .18*, .17 ns; 'Typical': MO -.27**, -.17 ns, .23 ns, .18; PO: -.17 ns, -.19*, .18*, .20*). These results indicate that

individuals who perceive their parents, especially their father, as having been caring and affectionate and not domineering or overprotective, perceive themselves to be satisfied with several aspects of their social relationships, and extend their working models to 'typical' students. View of self (SCQ positive and negative) was more strongly correlated with QRI friend (.33***, -.28***) than with QRI mother (.18*, -.01 ns) and father (.18**, -.17*) or PBI care (MC: .17*, -.10 ns; FC: .19**, -.11 ns), although not much stronger than with PBI overprotection (MO: -.29***, .26**, -PO: -.24***, .22**).

In similar vein, two competing theories by which individuals internalize their conception of 'family', are examined in a study based on 172 subjects (52 males and 120 females; ages between 17 and 61 years, with a mean age of 38.5; different cultures) recruited from medical and pediatric outpatient clinics.[134] Socialization Theory, which posits influence from the past, of early experiences of family of origin, which are 'fixed', across family life cycle stages, whilst in Social Transaction Theory, influence of characteristics of current relational environment on their 'family', allows for change, by overcoming or working through, traumatic childhood experiences. For the whole sample, weak correlations between care and control dimensions of the IBM (Intimate Bonding Measure) and the PBI, argues against the existence of a pervasive and stable internal model of relationships determined largely by 'origin' family experience. There were, however, moderate correlations for both the IBM and, to a lesser extent, the PBI, with the FAD-GF (general functioning scale, a short form of the Family Assessment Device). Separate multiple regression analyses for groups representing each of the family developmental stages in the sample, suggested changing relative importance of parent and partner influences (reflecting changing concept of who is experienced as 'family', the family of origin or the marriage/nuclear family or both) across developmental stages (inferred from a cross sectional study), on functioning of 'experienced' family. For the group consisting of those with 'no partner'(n=14), concept of 'experienced' family is the family of 'origin', and mother control (*beta* = .74, $p<0.05$) is the strongest predictor of family functioning. For those in an 'intimate relationship', but not married (n=32), the partner is included as part of the family of 'origin', and mother care (-.67, $p<0.001$) is the strongest predictor. For those 'married and not a parent' (n=14), the marriage emerges as the 'experienced' family, parental influence weakens and partner care (-.56, $p<0.05$) becomes the strongest predictor. For the 'married with 1-2 children' (n=30), the 'procreational' family now becomes the sole 'experienced' family, parental influence weakens further and partner care strengthens (-.79, $p<0.001$) as a predictor. For 'married with more than two children' (n=24), the pattern of association reverts to that similar to the 'married and no children', with the nuclear family and the family of origin incorpotated in the definition of 'family', with mother care (-.44, $p<0.05$) and partner care (-.47, $p<0.01$), both predictors of family

function. Quality of relationship with mother was an important determinant of the 'experienced' family, but for all married groups, the quality of the current intimate relationship was a stronger predictor.

In a study by Simmons[144] female nursing students were surveyed to find possible relationships among their own caring ability, the maternal and paternal care they received and nursing school climate. Two predictor variables: maternal care and paternal care were used in the study. These variables were quantified by subjects' responses on the care subscale of the PBI. Subjects' caring ability as the criterion variable was quantified on the Caring Ability Inventory (CAI)[151]. The CAI was taken from a selection of nursing outcome measures described by Nkongho[151].

Maternal care was found to be the predictor variable that provided the best explanation for caring ability in subjects. Over all, subjects with lower maternal care scores, scored higher in caring ability. However, a significant but weak curvilinear relationship was also observed for maternal care and subjects' caring ability. That is, subjects with low maternal care scores and those with high maternal care scores, both scored higher on caring ability than did subjects whose maternal care scores fell in the middle. The finding that subjects with low MC scores, scored over all higher on caring ability was discussed in terms of Peplau's[162] 'complementary patterns of behaviour', whereby students who perceived uncaring mothers, complemented the uncaring pattern by developing their own caring attitudes and behaviours.

To examine evidence for the “intergenerational transmission” of parental bonding in women, Miller et al.177 assessed mothers and daughters with the PBI over a 10-year follow-up period. They found that a daughter’s report of affectionless control in her mother remained significantly associated with the mother’s report of affectionless control in her own mother after controlling for SES, mother and daughter depression and mother and daughter temperament.

Mallinckrodt et al.[182], investigated the influences of `current social competencies’ and `memories of attachment bonds with parents’ on the working alliance between therapist and client. Seventy-six female subjects were given the PBI, the Self-Efficacy Scale, the Adult Attachment Scale and the Working Alliance Inventory. Parental (but not maternal) bonds were significantly associated with social competencies. High parental care was associated with the adult capacity to depend on others for emotional nurturance. Over-control was negatively associated with a willingness to allow emotional closeness in adults attachments. Parental bonds were also stronger predictors of the ‘working alliance’ than maternal bonds. Clients with poor working alliances rated fathers as over-controlling but also high on care. For these women, mothers were rated as low in protection. The study

highlighted a number of important points, in particular that parental bonds seem to contribute significant variance in client working alliance ratings.

Tayler et al.[191] studied a group of adults selected from a variety of sources originally from either 'divorced' or 'intact' families, to examine the possible relationship between exposure to parental divorce and quality of adult intimate relationships. Those exposed to parental divorce were more likely to report their fathers as being less caring. Links between PBI scores and intimate attachment levels in adulthood were non-significant. Generally, the authors found that neither exposure to parental divorce nor conflict was associated with the quality of adult intimate attachments.

Fukunishi et al.[203] examined the influences of perceived parental bonding on scores on alexithymia. Subjects were a sample of Japanese college students. They found that low maternal care scores were positively correlated with scores on a measure of alexithymia – in particular the construct of 'difficulty describing feelings'.

FAMILY MODELS

Kane[89] has proposed a model for the practice of family therapy based on numerous theories (including Bowlby) and references PBI-derived dimensions of CARE and PROTECTION as applying to family patterns.

THE PARENTAL BONDING INSTRUMENT: 2 OR 3 FACTORS

Recently there has been disagreement in the research literature about whether the PBI is best used as a two-factor or three-factor measure. Some literature suggests that the original overprotection factor couls be better defined by two separate factors, and that a more factor-validated measure of parental bonding/rearing behaviours may therefore be possible through the use of three factors.

Murphy et al.[220] factor analysed PBI scores from 583 US and 236 UK students and found a 3-factor solution to be more meaningful. Factors identified were labelled: (1) `care', (2) `denial of psychological autonomy' and (3) `encouragement of behavioural freedom'. The authors argue that the 3-factor PBI is more discriminating in relation to detecting group differences, and provide more insight into the different qualities of overprotection, and that the parenting behaviours associated with depression could be more accurately identified (i.e., the discouragement of behavioural freedom in females).

In a study by Kendler et al.[221] a 3-factor model was also yielded (from a 16-item version of the PBI) as part of their study into the determinants of parenting (N=828 twin families). The three factors were identified as (1) `warmth' (W) (a care factor), (2) `protectiveness' (P) and (3) `authoritarianism' (A). While the P scale reflected an overprotective and controlling parenting style, the A scale assessed a parental scale that either encouraged or discouraged a child's sense of autonomy and independence – thus warranting the recognition of two distinct factors. Sato et al.[222] administered the PBI to 418 employed Japanese adults. In an assessment of factor structure, they found that a 3-factor structure was superior (as compared to the 2-factor structure). Kendler's 3-factor model best fitted their data.

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