Parental Bonding: A Typology of the Parent–Child Relationship in a Population Sample

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Abstract
Estimating the early parent–child bonding relationship can be valuable in research and practice. Retrospective dimensional measures of parental bonding provide a means for assessing the experience of the early parent–child relationship. However, combinations of dimensional scores may provide information that is not readily captured with a dimensional approach. This study was designed to assess the presence of homogeneous groups in the population with similar profiles on parental bonding dimensions. Using a short version of the Parental Bonding Instrument (PBI), three parental bonding dimensions (care, authoritarianism, and overprotection) were used to assess the presence of unobserved groups in the population using latent profile analysis. The class solutions were regressed on 23 covariates (demographics, parental psychopathology, loss events, and childhood contextual factors) to assess the validity of the class solution. The results indicated four distinct profiles of parental bonding for fathers as well as mothers. Parental bonding profiles were significantly associated with a broad range of covariates. This person-centered approach to parental bonding has broad utility in future research which takes into account the effect of parent–child bonding, especially with regard to “affectionless control” style parenting.

Keywords
parental bonding, affectionless control, attachment, latent variable modeling

Introduction
The early parent–child relationship has been associated with numerous aspects of behavior and development (Cassidy & Shaver, 2008). An estimation of these early relationships in adults can be very useful. In clinical practice, this may inform diagnostics and therapeutic interventions, whereas in psychological research, it can contribute to a more precise understanding of the role of the early environment in the etiology of psychopathology and so on. However, estimating the early relationships in adulthood is not straightforward; direct observations are not (usually) available, and clinicians and researchers are dependent on retrospective reports on the early parent–child relationships. Nonetheless, various instruments have been developed to estimate the parenting relationship retrospectively, such as the Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979) and the related Measure of Parental Style (MOPS; Parker et al., 1997). The focus in this article is on a categorical conceptualization of the PBI.

The PBI is used to retrospectively assess received parenting along a number of parenting dimensions and was originally designed to measure two dimensions—care and overprotection—with a third dimension subsequently identified by a number of researchers: It was found that the overprotection dimension can be broken down into two further sub-dimensions, overprotection and authoritarianism (Cox, Enns, & Clara, 2000; Kendler, 1996; Murphy, Brewin, & Silka, 1997). Subsequent research has confirmed the three-factor nature of the PBI in various populations, including children (Tsaoasis, Mascha, & Giovaolozias, 2012). While many studies concur on the three-factor model (i.e., Terra et al., 2009), various studies have suggested that for eastern populations such as Japan and China, a four-factor model provides better fit (i.e., Liu, Li, & Fang, 2010; Suzuki & Kitamura, 2011). In these populations, a fourth factor identified as “indifference” has been identified.

While dimensional-based instruments like the PBI can accommodate variation along dimensions, they do not readily incorporate a categorical component that allows for classification. A person-centered approach to the dimensional

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PBI would be potentially useful to assess the effect of combinations of parenting dimensions, which may provide insights that may be missed by taking a purely dimensional view. The two- and three-factor solutions of the PBI have to date helped to describe parental behavior in terms of care, overprotection, and authoritarianism, but it may be that there is significant heterogeneity in endorsement patterns in the population, which might lead to the identification of a number of clusters of individuals with similar profiles on the three dimensions. These clusters could represent different parental bonding types. Such a typology, or classification, of parenting may be a useful method of describing similarities and differences in reported parenting in the population. It was the purpose of this study to assess the presence of such clusters using a Latent Profile Modeling (LPA) approach.

Combinations of factors have been assessed previously using either median-split categorization of the PBI or simple interactions between pairs of dimensions. It was found that a parenting style characterized by low care and high overprotection (“affectionless control”) was predictive of psychopathology (Overbeek, ten Have, Vollebergh, & de Graaf, 2007; Parker, 1990; Sato et al., 1998) and personality traits (Oshino, Suzuki, Ishii, & Otani, 2007). However, both methods of combining factors have limitations. Median-split categorization is based on dichotomization of continuous dimensions, which is rarely defensible (MacCallum, Zhang, Preacher, & Rucker, 2002). Using an interaction approach, only pairs of variables can be assessed, which limits the usefulness of this method for research attempting to assess more than two variables simultaneously. Classification of respondents on the basis of the more recent three-factor solution has to date not been reported although this would be a potentially valuable way of assessing the (retrospectively reported) parent–child relationship. The purpose of this study was therefore to establish whether differential patterns of maternal and paternal bonding could be identified in the general population based on the three-factor PBI using LPA. In LPA, group membership is inferred from the data, meaning that the observed data are the outcomes predicted by the inferred subpopulations. Any correlations between the observed data are therefore modeled to be due to a number of latent classes. In LPA, the number of latent classes is increased until the correlations between the observed data (the indicators) are adequately accounted for. With the use of LPA, it should be possible to assess whether groups of individuals can be identified based on similarity of scores on the various PBI dimensions. For this study, a short version of the PBI was analyzed as found in the National Comorbidity Survey (NCS; Kessler et al., 1994). The factor structure in the short PBI in the NCS has been found to fit adequately (Cox et al., 2006). Factor scores can be calculated on the basis of the confirmatory factor analysis, yielding three standardized continuous variables assessing care, overprotection, and authoritarianism. These variables could subsequently be used as indicators in LPA.

In the second part of this study, results from the LPA were regressed on a number of covariates. Latent profile solutions of the PBI may be assessed and validated in terms of how the various classes vary in terms of factors that are substantively expected to be related to parenting styles. The research literature has highlighted a number of variables which account for variation in parenting. Belsky (1984) suggested three general domains of determinants of parenting behavior: (a) the parent’s personal psychological resources, (b) child characteristics, and (c) contextual sources of stress and support.

Few studies using the PBI report on determinants of parenting. Kendler, Sham, and MacLean (1997), using a modified version of the PBI (Kendler, 1996), assessed three-dimensional factors (warmth, protectiveness, and authoritarianism) and found significant effects on individual parenting factors for parental factors (parental marital quality, parental psychopathology, age, education, religiosity, psychiatric symptoms, and personality) as well as for child characteristics (personality, disobedience, hyperactivity, birth order, and number of siblings). A recent study by Picardi et al. (2013), investigating parental style in an Italian sample, estimated the association of four demographic variables with the PBI (gender, age, marital status, and education level of respondents) and found significant effects for each predictor on one of more dimensions of parental bonding.

In this study, it was decided to assess a range of predictors that were available in the NCS data set. These predictors fall into four broad categories: respondent demographics, parental psychopathology, attachment/loss events, and factors related to the family context in which the respondent was reared.

This study had two aims. The first aim was to develop an empirical typology of parental bonding based on the PBI using data from a large community survey. It was predicted that an LPA-derived PBI typology would share similarities with the median-split categorization proposed by Parker using the dimensions of care and overprotection. However, it was expected that the third factor (authoritarianism) would provide further definition to bonding types, and the possible identification of additional bonding types. The second aim of the study was to determine to what extent any resulting latent profile solution distinguishes parenting types in terms of background variables. If background variables are significantly associated with LPA-derived profiles, this may provide a level of validation of the profiles and the methodology used.

**Method**

**Participants**

This study drew on data from the NCS (Kessler et al., 1994). The NCS was an epidemiologic investigation designed to study the prevalence and correlates of *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed., rev.;
parent–child relationships in childhood was assessed using a short version of the PBI. All questions were scored on a 4-point Likert-type scale: a lot (4), some (3), a little (2), not at all (1). For the analyses, data were recoded so that high scores reflected higher levels of endorsement on each item. Some data were missing on all of the NCS-PBI items. The PBI-mother section contained 38 missing cases (0.65%), as well as a small percentage of missing values (0.27%-0.46%) on each of the items apart from the missing cases. The PBI-father section contained 463 cases (7.88%) with no information at all on any of the items. Some missing values (0.03%-0.20%) were also recorded on the PBI-father items apart from the missing cases.

Factor scores were calculated using a modified version of the short PBI as contained in the NCS (de Cock, 2010). The six-item model fitted the data adequately (Mothers: comparative fit index [CFI] = .962, root mean square error of approximation [RMSEA] = .095, standardized root mean square residual [SRMR] = .039; Fathers: CFI = .980, RMSEA = .064, SRMR = .027) and indicated the presence of three clear factors: Care, Authoritarianism, and Overprotection. The Care dimension was identified by the items “How much did he or she understand your problems and worries?” and “How much could you confide in him or her about things that were bothering you?” The Authoritarianism dimension was indicated by the items “How much did he or she stop you from doing things that other kids your age were allowed to do?” and “How strict was he or she with his or her rules for you?” And the Overprotection dimension was indicated by the items “How overprotective was he or she?” and “How much did he or she baby you?” Table 1 provides the means and standard deviations of summed scores on each dimension by parent.

In total, 23 possible predictors of parenting style were used in this study, categorized in four domains: (a) respondent demographics, (b) parental psychopathology, (c) interpersonal loss events, and (d) family characteristics. Respondent demographics that were entered in this study included age (continuous), gender (male = 1, female = 0), race (Caucasian = 1, Other = 0), marital status (married/cohabiting = 1, single/divorced/widowed = 0), and whether or not the respondent had children himself or herself (children = 1, no children = 0). Socio-economic measures of respondents’ income and education were also included in the analysis. Low income (US dollars) ($0-$19,999 annual income) was scored as 0, and higher (non-low) income ($20,000+) was scored 1. Education was scored 0 for 0 to 11 years of education and 1 for 12+ years of education (12 years of education represents the minimum statutory requirement).

Parental psychopathology was assessed using the Family History and Research Diagnostic Criteria (FHRDC; Endicott, Andreasen, & Spitzer, 1978), which uses retrospective reports from respondents to assess parental depression, substance dependence, and antisocial personality (ASP). Generalized anxiety disorder (GAD) was assessed similarly, using an FHRDC-based instrument developed by Kendler et al. (1991). These instruments yield a dichotomous diagnosis, with 1 representing the probable presence of the disorder in the relevant parent and 0 indicating its absence.

Interpersonal loss events in this study included parental or respondent absences in childhood of at least 6 months and the death of a parent before the respondents’ 16th birthday. All data were recoded so that 1 indicated the presence of a loss event and 0 its absence.

Finally, family characteristics were represented by parental divorce/separation (yes = 1, no = 0), conflict in the home (yes = 1, no = 0), and childhood urbanicity (city = 1, rest [rural, small town, medium town, and suburb] = 0).

### Data Analysis: Latent Profile Analysis (LPA)

Factor scores of the PBI dimensions were calculated and used to identify homogeneous groups or classes of respondents using LPA. The fit of seven models was assessed (a two-class through to an eight-class solution). The selection of the optimal number of latent classes was based on the Akaike information criterion (AIC; Akaike, 1987), the Bayesian information criterion (BIC; Schwartz, 1978), and the sample size adjusted Bayesian information criterion (SSABIC; Sclove, 1987), with comparatively lower values indicating better fitting models. In addition, the Lo–Mendell–Rubin likelihood ratio test (LRT) was used (Lo, Mendell, & Rubin, 2001), which compares a k class solution to a k − 1 class solution (where k is the given number of latent classes). This method tests the hypothesis that the null model (k − 1) is acceptable. If the probability value (p) is less than .05, the k model is superior and additional classes are added until the p value for the statistic is greater than .05, at which point the previous model is accepted (Lo et al., 2001). In LPA, as a
Table 2. Fit Indices Maternal PBI.

|        | AIC      | BIC      | SSABIC  | Entropy | LRT      | p   |
|--------|----------|----------|---------|---------|----------|-----|
| Two-class | 44,440   | 44,493   | 44,468  | 0.59    | 1,538    | .00 |
| Three-class | 43,097   | 43,177   | 43,139  | 0.69    | 1,313    | .00 |
| Four-class | 42,068   | 42,175   | 42,124  | 0.75    | 1,008    | .00 |
| Five-class | 41,719   | 41,852   | 41,788  | 0.77    | 347      | .00 |
| Six-class | 41,428   | 41,588   | 41,512  | 0.75    | 290      | .00 |
| Seven-class | 40,941   | 41,128   | 41,039  | 0.75    | 481      | .00 |
| Eight-class | 40,649   | 40,863   | 40,761  | 0.76    | 292      | .00 |

Note. PBI = Parental Bonding Instrument; AIC = Akaike information criterion; BIC = Bayesian information criterion; SSABIC = sample size adjusted Bayesian information criterion; LRT = likelihood ratio test.

Table 3. Fit Indices Paternal PBI.

|        | AIC      | BIC      | SSABIC  | Entropy | LRT      | p   |
|--------|----------|----------|---------|---------|----------|-----|
| Two-class | 42,482   | 42,535   | 42,509  | 0.54    | 1,401    | .00 |
| Three-class | 41,558   | 41,637   | 41,599  | 0.67    | 906      | .00 |
| Four-class | 40,360   | 40,465   | 40,414  | 0.71    | 1,172    | .00 |
| Five-class | 40,190   | 40,322   | 40,259  | 0.68    | 172      | .00 |
| Six-class | 39,907   | 40,065   | 39,989  | 0.71    | 283      | .00 |
| Seven-class | 39,539   | 39,724   | 39,635  | 0.74    | 365      | .00 |
| Eight-class | 39,237   | 39,448   | 39,347  | 0.75    | 301      | .00 |

Note. PBI = Parental Bonding Instrument; AIC = Akaike information criterion; BIC = Bayesian information criterion; SSABIC = sample size adjusted Bayesian information criterion; LRT = likelihood ratio test.

The profiles of the classes in the four-class solutions were plotted along with the percentages of respondents classified in each of these classes (Figure 2). The four classes indicated substantively comparable profiles for both mothers and fathers. The classes that were found were also substantively similar to the original median-split-based typology originally proposed by Parker et al. (1979), albeit with further added nuance. For both, a large first class was identified, characterized by high levels of care, authoritarianism, and overprotection (labeled “affectionate constraint” [AC] from here on). A second class was characterized by high levels of care and low levels of authoritarianism (labeled “optimal” [O] as it appeared conceptually similar to Parker’s optimal PBI style).
The third class had low levels of care, high levels of authoritarianism, and scores close to the mean on overprotection (labeled “affectionless authoritarian” [AA], similar to the affectionless control style identified by Parker). A fourth class was characterized by low levels on each of the parental bonding dimensions (labeled “neglectful/indifferent” [NI]). Best log likelihood was replicated for these analyses.

Entering the 23 covariates in the LPA analyses yielded class solutions that were similar in interpretation to the LPA results without covariates. Marsh et al. (2009) state that the inclusion of covariates in LPA is inappropriate when they alter the definition of the latent groups. In this study, the definition and interpretation of groups remained unchanged, which indicated that it was meaningful to proceed. Comparing the two solutions for each parent found that the classifications were not significantly different for mothers ($\chi^2 = 22.08, df = 15, p = .11$) or for fathers ($\chi^2 = 15.18, df = 15, p = .44$). Some changes in class sizes were observed, however, probably resulting from improved classification due to the inclusion of the covariates (Lubke & Muthén, 2007). The most notable change in classification was that the first class of paternal parenting was not the largest class in this analysis, but the second largest. In the maternal analysis, the order of the class sizes remained unchanged.

**Maternal PBI Styles and Covariates**

Maternal PBI styles were significantly associated with all demographic variables, except for marital status of the respondent (Table 4). Particularly strong effects were found for gender, with males much less likely to report AA parenting than females and more likely to report O parenting. Another strong effect was found for race: Caucasian respondents were more likely to report O, AA, and NI bonding styles than non-Caucasians.

Parental psychopathology was associated with maternal bonding styles: Maternal GAD was associated with lower likelihood of reporting O parenting and higher likelihood of
### Table 4. Maternal Bonding Style and Covariates.

| (Ref) Class 1 | Class 2 | Class 3 | Class 4 |
|---------------|---------|---------|---------|
|               | Sample  | Affectionate constraint | Optimal | Affectionless authoritarian | Neglect/indifference |
| Demographics  |         |                     |         |                         |                     |
| Children, %   | 57.1    | 53.5     | 53.7    | 68.3                     | 69.5                |
| OR            | 0.924   |          | 1.348   | 1.320                     |
| 95% CI        | [0.760, 1.124] | [1.021, 1.781] | [0.951, 1.832] |
| Age (M)       | 31.979  | 30.509   | 32.235  | 33.568                    | 35.127              |
| OR            | 1.011*  |          | 1.018*  | 1.034*                    |
| 95% CI        | [1.002, 1.021] | [1.003, 1.033] | [1.021, 1.048] |
| Sex (male), % | 47.9    | 47.4     | 57.5    | 28.2                      | 41.8                |
| OR            | 1.453*  |          | 0.508*  | 0.932                     |
| 95% CI        | [1.244, 1.697] | [0.393, 0.656] | [0.731, 1.189] |
| Race (Caucasian, %) | 76.7  | 65.4     | 87.5    | 75.2                      | 87.4                |
| OR            | 3.430*  |          | 1.497*  | 3.257*                    |
| 95% CI        | [2.792, 4.214] | [1.150, 1.949] | [2.307, 4.599] |
| Education, %  | 79.6    | 74.1     | 84.1    | 81.6                      | 83.9                |
| OR            | 1.524*  |          | 1.316   | 1.425*                    |
| 95% CI        | [1.239, 1.874] | [0.985, 1.759] | [1.049, 1.937] |
| Married/cohab, % | 49.3  | 45.4     | 51.1    | 52.9                      | 54.4                |
| OR            | 0.979   |          | 0.912   | 0.824                     |
| 95% CI        | [0.816, 1.175] | [0.711, 1.170] | [0.623, 1.089] |
| Income, %     | 69.3    | 63.5     | 76.8    | 65.0                      | 72.6                |
| OR            | 1.424*  |          | 1.019   | 1.266                     |
| 95% CI        | [1.187, 1.708] | [0.798, 1.302] | [0.966, 1.660] |
| Parental psychopathology |         |         |         |                         |                     |
| Dad dep, %    | 16.6    | 15.4     | 15.9    | 18.7                      | 21.7                |
| OR            | 0.948   |          | 0.824   | 1.028                     |
| 95% CI        | [0.743, 1.210] | [0.607, 1.117] | [0.737, 1.436] |
| Dad GAD, %    | 13.8    | 12.6     | 13.9    | 15.7                      | 15.9                |
| OR            | 1.189   |          | 0.721   | 0.672*                    |
| 95% CI        | [0.913, 1.550] | [0.503, 1.034] | [0.459, 0.983] |
| Dad sub ab, % | 20.7    | 17.9     | 18.8    | 27.0                      | 31.1                |
| OR            | 1.150   |          | 1.012   | 1.108                     |
| 95% CI        | [0.925, 1.430] | [0.764, 1.340] | [0.837, 1.467] |
| Dad ASP, %    | 2.3     | 1.9      | 1.8     | 3.7                       | 4.0                 |
| OR            | 0.976   |          | 0.784   | 0.644                     |
| 95% CI        | [0.539, 1.766] | [0.429, 1.432] | [0.338, 1.228] |
| Mum dep, %    | 26.2    | 22.2     | 20.6    | 41.9                      | 42.1                |
| OR            | 0.981   |          | 1.266   | 1.159                     |
| 95% CI        | [0.790, 1.220] | [0.959, 1.672] | [0.862, 1.558] |
| Mum GAD, %    | 19.8    | 17.0     | 12.2    | 37.8                      | 34.7                |
| OR            | 0.586*  |          | 1.585*  | 1.106                     |
| 95% CI        | [0.454, 0.756] | [1.196, 2.100] | [0.811, 1.507] |
| Mum sub ab, % | 7.6     | 4.6      | 5.3     | 13.4                      | 21.2                |
| OR            | 1.114   |          | 1.092   | 1.714*                    |
| 95% CI        | [0.759, 1.636] | [0.723, 1.648] | [1.163, 2.527] |
| Mum ASP, %    | 9.3     | 5.4      | 6.0     | 18.2                      | 25.4                |
| OR            | 1.293   |          | 1.871*  | 2.487*                    |
| 95% CI        | [0.904, 1.849] | [1.297, 2.699] | [1.725, 3.586] |
| Parental loss events |         |         |         |                         |                     |
| Dad died, %   | 5.8     | 6.8      | 4.5     | 6.0                       | 6.1                 |
| OR            | 0.710*  |          | 0.912   | 0.990                     |
| 95% CI        | [0.509, 0.992] | [0.597, 1.394] | [0.608, 1.610] |
reporting AA parenting. Maternal substance abuse and ASP were both associated with increased likelihood of reporting NI parenting, while ASP was in addition associated with increased likelihood of reporting AA parenting. A crossover effect was found for paternal GAD on maternal bonding style: Paternal GAD was associated with a reduced likelihood of NI maternal bonding.

Loss of—or absence from—a parent was associated with remembered parenting. The loss of a father or mother both reduced the likelihood of reporting O maternal bonding. Absences of the mother were associated with NI maternal bonding, and respondent absences increased the likelihood of reporting AA and NI maternal bonding. Paternal absences did not affect maternal parenting.

Of the family characteristics, both divorce/separation of the parents as well as conflict in the home were significantly associated with reported maternal bonding style. Paternal divorce was associated with increased likelihood of reporting O and NI maternal bonding. Conflict in the home was associated with increased likelihood of reporting AA and NI maternal bonding.

**Paternal PBI Styles and Covariates**

All respondent demographics were significantly associated with paternal bonding styles, mostly in ways similar to maternal bonding styles (Table 5). However, a major difference between mothers and fathers was found in the way gender was associated with parental bonding styles. For fathers, males were more likely to report O and NI paternal bonding than females.

Parental psychopathology was found to be associated with paternal bonding styles as well: Paternal GAD was associated with lower likelihood of reporting O paternal bonding, and paternal substance abuse was associated with higher likelihood of AA and NI paternal bonding. Here too, a crossover effect was found, with maternal depression increasing the likelihood of NI paternal bonding.

Parental loss or absences from a parent affected reported paternal bonding less than maternal bonding. The loss of a mother resulted in a lower likelihood of reporting O paternal bonding and the long absence of a father significantly increased the likelihood of AA paternal bonding.

### Table 4. (continued)

|                          | Sample | Affectionate constraint | Optimal | Affectionless authoritarian | Neglect/indifference |
|--------------------------|--------|-------------------------|---------|-----------------------------|-----------------------|
| Mum died, %              | 2.5    | 3.1                     | 1.4*    | 3.6                         | 2.7                   |
| OR                       |        |                         | 0.495*  | [0.281, 0.871]              | [0.740, 2.344]        |
| 95% CI                   |        |                         | 1.317   | [0.452, 2.053]              | [0.964, 1.954]        |
| Dad 6m+ abs, %           | 7.0    | 6.8                     | 6.4     | 8.0                         | 8.9                   |
| OR                       |        |                         | 0.979   | [0.717, 1.336]              | [0.692, 1.512]        |
| 95% CI                   |        |                         | 1.023   | [0.832, 1.954]              | [1.275, 1.665]        |
| Mum 6m+ abs, %           | 0.7    | 0.4                     | 0.7     | 0.6                         | 1.9                   |
| OR                       |        |                         | 2.597   | [0.880, 7.667]              | [0.697, 1.533]        |
| 95% CI                   |        |                         | 1.224   | [0.264, 5.663]              | [0.635, 2.416]        |
| Resp 6m+ abs, %          | 2.3    | 1.7                     | 1.6     | 4.3                         | 4.6                   |
| OR                       |        |                         | 1.000   | [0.557, 1.795]              | [1.112, 3.631]        |
| 95% CI                   |        |                         | 2.009*  | [1.056, 3.898]              | [1.049, 3.898]        |

**Family characteristics**

- **Div/sep, %**: 20.3 18.2 18.8 23.0 30.7
- **OR**: 1.439* 1.109 1.827* 1.361 2.453
- **95% CI**: [1.159, 1.787] [0.827, 1.487] [1.361, 2.453]
- **Conflict**: 2.514 2.348 2.308 3.082 3.195
- **OR**: 0.934 2.076* 2.256* 2.195 2.685
- **95% CI**: [0.855, 1.021] [1.806, 2.387] [1.895, 2.685]
- **Urbanicity, %**: 75.1 72.9 78.5 72.7 75.2
- **OR**: 1.007 0.928 0.942 0.928 0.942
- **95% CI**: [0.837, 1.213] [0.725, 1.189] [0.720, 1.233]

Note. OR = odds ratio; CI = confidence interval; cohab = cohabiting; dep = depression; GAD = generalized anxiety disorder; sub ab = substance abuse; ASP = antisocial personality; dad 6m+ abs = paternal absences of 6 months or more; mum 6m+ abs = maternal absences of 6 months or more; resp 6m+ abs = respondent absences for 6 months or more; Div/sep = parental divorce or separation.

*Statistically significant effects.
Table 5. Paternal Bonding Style and Covariates.

|                          | (Ref) Class 1 | Class 2 | Class 3 | Class 4 |
|--------------------------|---------------|---------|---------|---------|
|                          | Sample | Affectionate constraint | Optimal | Affectionless authoritarian | Neglect/indifference |
| Demographics             |        |                     |        |         |         |
| Children, %              | 57.5   | 54.7                | 51.5   | 67.6    | 62.0    |
| OR                       | 0.989  | 1.496*              | 1.144  |         |         |
| 95% CI                   | [0.788, 1.240] | [1.149, 1.947] | [0.873, 1.500] |         |
| Age (M)                  | 32.234 | 30.815              | 31.588 | 33.846  | 34.071  |
| OR                       | 1.003  | 1.015*              | 1.028* |         |         |
| 95% CI                   | [0.992, 1.014] | [1.002, 1.027] | [1.016, 1.040] |         |
| Sex (male), %            | 47.9   | 37.5                | 64.1   | 35.4    | 49.8    |
| OR                       | 3.070* | 1.090               | 1.994* |         |         |
| 95% CI                   | [2.514, 3.750] | [1.085, 1.393] | [1.590, 2.500] |         |
| Race (White), %          | 78.5   | 66.6                | 84.5   | 82.0    | 84.1    |
| OR                       | 2.696* | 2.270*              | 2.735* |         |         |
| 95% CI                   | [2.142, 3.393] | [1.741, 2.960] | [2.078, 3.599] |         |
| Education, %             | 80.4   | 74.1                | 83.2   | 82.1    | 84.3    |
| OR                       | 1.710* | 1.370*              | 1.760* |         |         |
| 95% CI                   | [1.355, 2.159] | [1.045, 1.797] | [1.334, 2.322] |         |
| Married/cohab, %         | 50.7   | 48.4                | 49.3   | 55.2    | 51.9    |
| OR                       | 0.865  | 0.836               | 0.780* |         |         |
| 95% CI                   | [0.701, 1.068] | [0.652, 1.073] | [0.611, 0.997] |         |
| Income, %                | 70.8   | 64.2                | 76.4   | 70.4    | 71.1    |
| OR                       | 1.448* | 1.161               | 1.191  |         |         |
| 95% CI                   | [1.176, 1.783] | [0.907, 1.486] | [0.938, 1.511] |         |
| Parental psychopathology|        |                     |        |         |         |
| Dad dep, %               | 17.4   | 14.9                | 13.2   | 23.5    | 22.5    |
| OR                       | 0.979  | 0.955               | 1.032  |         |         |
| 95% CI                   | [0.732, 1.311] | [0.714, 1.279] | [0.776, 1.371] |         |
| Dad GAD, %               | 14.3   | 12.6                | 9.6    | 22.6    | 16.8    |
| OR                       | 0.723* | 1.160               | 0.741  |         |         |
| 95% CI                   | [0.526, 0.993] | [0.851, 1.582] | [0.537, 1.022] |         |
| Dad sub ab, %            | 20.6   | 13.0                | 13.4   | 30.7    | 35.8    |
| OR                       | 1.265  | 1.729*              | 2.418* |         |         |
| 95% CI                   | [0.952, 1.682] | [1.321, 2.263] | [1.858, 3.147] |         |
| Dad ASP, %               | 2.1    | 1.1                 | 0.7    | 3.8     | 4.5     |
| OR                       | 0.704  | 0.990               | 1.015  |         |         |
| 95% CI                   | [0.253, 1.963] | [0.479, 2.048] | [0.486, 2.120] |         |
| Mum dep, %               | 25.6   | 20.6                | 20.6   | 33.3    | 34.9    |
| OR                       | 1.179  | 1.226               | 1.403* |         |         |
| 95% CI                   | [0.910, 1.527] | [0.936, 1.604] | [1.074, 1.833] |         |
| Mum GAD, %               | 19.6   | 16.9                | 14.0   | 26.7    | 27.1    |
| OR                       | 0.772  | 0.763               | 0.833  |         |         |
| 95% CI                   | [0.580, 1.028] | [0.572, 1.019] | [0.626, 1.109] |         |
| Mum sub ab, %            | 7.2    | 4.3                 | 5.8    | 10.5    | 11.2    |
| OR                       | 1.436  | 1.030               | 1.071  |         |         |
| 95% CI                   | [0.924, 2.233] | [0.671, 1.581] | [0.687, 1.670] |         |
| Mum ASP, %               | 8.9    | 6.5                 | 6.5    | 13.2    | 12.9    |
| OR                       | 1.120  | 1.015               | 0.896  |         |         |
| 95% CI                   | [0.748, 1.677] | [0.689, 1.495] | [0.605, 1.326] |         |
| Parental loss events     |        |                     |        |         |         |
| Dad died, %              | 4.9    | 5.1                 | 5.2    | 3.5     | 5.6     |
| OR                       | 1.162  | 0.757               | 1.250  |         |         |
| 95% CI                   | [0.782, 1.725] | [0.463, 1.238] | [0.801, 1.951] |         |

(continued)
Family characteristics while growing up were significantly associated with reported paternal bonding style in similar ways as the maternal bonding styles. Parental divorce/separation was associated with increased likelihood of reporting O and NI paternal bonding. Conflict in the home was associated with increased likelihood of reporting AA and NI bonding (similar to maternal bonding) and additionally with decreased likelihood of reporting O paternal bonding. Urbanicity (living in dense urban areas) was furthermore associated with a reduced likelihood of reporting NI paternal bonding.

**Discussion**

**Typology**

The LPA in this study resulted in a solution that broadly mirrors the original median-split categorization utilized by Parker et al. (1979), even when taking into consideration that an additional factor was used to identify the parental bonding types. The first class is similar to the parenting style that Parker named “affectionate constraint.” The second class appears similar to what Parker referred to as “optimal” parenting. Class 3 parenting is similar to the “affectionless control” style described by Parker but may be better described in this study as “affectionless authoritarianism,” because the more salient aspect of this parenting type are the low care and high authoritarianism (rather than overprotection). Overprotection lies around the sample mean in this class in both sets of analyses. Class 4, with low scores on all factors might be best described as a “neglectful/indifferent” type of parenting, analogous with what Parker called “absent or weak bonding.” This finding that the LPA solution mirrors Parker’s original typology provides validation of the method applied in this study. However, some notable differences from Parker’s typology emerged: In this study, it was found that respondents’ response patterns on the short PBI can be categorized in groups, which differ considerably in size (as opposed to median-split categorization where each category represents an equal share of the study population), while the added dimension adds further nuance to the bonding styles. The dimensions overprotection and authoritarianism, although both initially thought to be part of the same factor (overprotection), yield varying response patterns in the four

| Family characteristics | Class 1 | Class 2 | Class 3 | Class 4 |
|------------------------|---------|---------|---------|---------|
|                        | Mum died, % | Mum 6m+ abs, % | Dad 6m+ abs, % | Resp 6m+ abs, % |
|                        | Sample | OR | OR | OR | OR |
|                        | 2.8 | 3.5 | 1.7 | 0.554* | 0.680, 1.471 | 0.740, 5.895 |
|                        | 16.4 | 12.8 | 14.9 | 1.558* | 1.711, 2.071 | 1.771, 2.077 |
|                        | 2.505 | 2.237 | 2.133 | 0.866* | 0.882, 1.555 | 0.872, 1.555 |
| Div/sep, % | 76.4 | 75.8 | 77.2 | 0.830 | 0.669, 1.030 | 0.697, 1.257 | 0.569, 0.965 |

Note. OR = odds ratio; CI = confidence interval; cohab = cohabiting; dep = depression; GAD = generalized anxiety disorder; sub ab = substance abuse; ASP = antisocial personality; dad 6m+ abs = paternal absences of 6 months or more; mum 6m+ abs = maternal absences of 6 months or more; resp 6m+ abs = respondent absences for 6 months or more; Div/sep = parental divorce or separation.

*Statistically significant effects.
classes that were identified. Further validation of the class solutions came from the finding that similar class solutions were replicated for both fathers and mothers, which supports the idea that these classes represent actual styles of parental bonding in the population.

**Validation**

The next part of the study was to test the class solutions in terms of their ability to distinguish qualitatively different groups in the population. The inclusion of the 23 variables (demographics, parental psychopathology, loss events, and contextual childhood factors) did not substantively change the LPA solution (although some changes in classification were observed), and of the included extraneous variables, 21 were found to significantly predict parental bonding style for mothers and/or fathers (Tables 4 and 5). All extraneous variables were entered in the LCA simultaneously, resulting in a multinomial analysis in which the effect of each variables was controlled for all other variables. While many significant associations were found, there were some surprising non-significant findings as well. For instance, large differences in the raw percentages of parental psychopathology were found in various PBI classes. However, many of these (rather large) differences were not found to be statistically significant. For instance, the effect of maternal depression on perceived parental bonding style (Table 4), where large differences in percentages of maternal depression were found between groups (AC: 22.2%; O: 20.6%; AA: 41.9%; and NI: 42.1%), but the odds ratios (ORs) did not indicate significant differences after controlling for the other covariates. The complex interplay between the various determinants of parenting or parental bonding may warrant further investigation, but, in this study, only the fully controlled effects of determinants on parental bonding were analyzed.

A few general observations can be made regarding covariate effects. First of all, large effects for gender were found. Males were more likely to report O parental bonding than females, especially for fathers (OR = 3.070) but also for mothers (OR = 1.453). They were also less likely to report maternal AA bonding (OR = 0.508) and more likely to report paternal NI bonding (OR = 1.994). These outcomes indicate that fathers and mothers have a different approach to parenting male and female offspring. The much increased rates of O and NI paternal bonding styles (these styles have lower rates of authoritarianism and overprotection in common compared with the AC style) for males suggest that fathers display a less authoritarian (and protective) style of parenting toward male offspring. For maternal parenting, the pattern was different: There was a similar increased likelihood of O maternal bonding reported by males, but no association with NI maternal bonding. Instead, there was a much decreased likelihood of AA maternal bonding for males. These strong effects for gender of parent and gender of respondent, strongly suggest that in future research, it would be recommended to split analyses by respondent gender.

Further general effects were found for age, race, and education. Mean ages in each of the parental bonding categories were raised compared with the reference group (except paternal O bonding). Further research may elucidate the effect of age on remembered parenting: Have parenting practices changed or does advanced age (and associated life experience) alter one’s view on received parenting? With regard to race, it has been striking to find that Caucasian respondents had much increased likelihoods of falling into one of the Classes 2 to 4, rather than in the reference class. This means inversely that non-Caucasians reported Class 1 (AC) parenting significantly more often than Caucasians. Similarly, nearly all parental bonding classes (except paternal AA) were characterized by higher education level compared with the AC style.

**Class Characteristics**

Below follows a characterization of the various classes. All classes are described in their relation to the “affectionate constraint” reference class.

**Class 2: Optimal bonding.** Apart from the abovementioned general effects (age, race, and education), the O bonding style was associated with what could be described as generally more positive predictors, in similar ways for fathers and mothers. For both analyses, the O style was associated with higher income, lower rates of reported GAD for the relevant parent and lower rates of the death of the other parent (paternal O style associated with lower maternal death and vice versa). Parent-specific factors were a reduced level of conflict while growing up associated with O fathers and lower rates of maternal death for O mothers. While mostly associated with positive factors, the O style was also associated with one less positive factor for both the fathers and mothers: increased parental divorce/separation.

**Class 3: Affectionless authoritarian bonding.** AA bonding was positively associated with race, age, having children oneself, and conflict in the home (while growing up) in both the paternal and maternal analyses. Maternal AA bonding was furthermore associated with gender (fewer males than females reported maternal AA bonding), maternal psychopathology (positive associations with maternal GAD and ASP), and respondent absences for 6 months or more before age 16. Paternal AA bonding was associated with a higher level of education, paternal psychopathology (SA only), and paternal absences for 6 months or more before age 16.

These associations of AA bonding with conflict in the home, parental psychopathology, and loss of/from a caregiver suggest that this parenting style represents a less optimal rearing environment. This finding is interesting as previous studies have indicated that the affectionless control style of parenting predicts psychopathology (i.e., Overbeek et al., 2007; Sato et al., 1998) and is a risk factor for suicidality (Goschin, Briggs, Blanco-Luten, Cohen, & Galynker,
2013). These findings of associations of AA bonding with adverse factors add further weight to the suboptimal nature of parenting styles characterized by low levels of warmth and high levels of authoritarianism and control. These findings furthermore suggest a possible mediating role for AA bonding in the intergenerational transmission of psychopathology. An affectionless control style of parenting predicts psychopathology later in life for the child, but here we see that this style of parenting is itself predicted by parental psychopathology.

A curious finding was the significantly increased likelihood of having children oneself—in both the paternal and maternal analyses. It is unclear what might explain this effect. It may be that having kids alters one’s view of one’s own upbringing. While it seems plausible that the transition to parenthood gives a person a different view of his or her own upbringing, it is not clear why this effect should be observed with a propensity to report a more negative-reported parenting style.

**Class 4: Neglectful/indifferent parenting.** For both parents, the NI parental bonding style was associated with higher age, race (Caucasian), higher education, parental substance abuse, parental divorce/separation, and conflict in the home while growing up. Maternal NI parenting was additionally characterized further by parental psychopathology (positive associations with maternal ASP and depression, and negative associations with paternal GAD) and maternal or respondent absences while growing up. Paternal NI was also positively associated with being male, and negatively with urbanicity.

NI parenting appears to identify a subgroup of parents who are relatively unavailable to their child: Low levels of care, authoritarianism, and overprotection may indicate parents who have taken a less active role in parenting. Unavailability seems congruent with the higher rates of parental substance abuse and ASP. Also, the long absences of or from a parent (mothers only in this study) are consistent with a relatively unavailable parent. Finally, the higher rates of divorce and conflict in the parental home complete an image of a rather adverse rearing situation. However, this does not appear to affect socio-economic factors of the respondent. In fact, the education levels in this group are significantly higher than the reference group in both analyses.

**Conclusion**

This study has demonstrated a method for empirically deriving a person-centered typology of parental bonding, using LPAs based on factor scores of the PBI. In the process, this study has provided empirical support for the “affectionless control/affectionless authoritarianism” construct, which has been associated with psychopathology (Overbeek et al., 2007; Parker, 1990; Sato et al., 1998).

This is only the second study that investigated a broad range of predictors on PBI parental bonding. Kendler et al. (1997) assessed predictors of parental bonding using PBI dimensions—this is the first study (to our knowledge) in which a categorical conceptualization of parental bonding was investigated in terms of associations of a broad range of extraneous variables with bonding style. Of 23 covariates entered in the analysis, 21 were found to significantly predict the bonding style of at least one of the parents, which provides strong validation for the methodology and the resulting class solution. Especially the identification of a more optimal bonding type (O) and two less optimal bonding types (AA and NI) in terms of associated characteristics confirms that the bonding styles are not statistical artifacts but represent qualitatively different latent groups in the population.

A potential limitation in this study is the retrospective nature of the PBI. Retrospective accounts of parenting may not accurately reflect actual received parenting but are likely to be affected by a range of life events, which may modify a person’s perception of the parent–child relationship. However, recent research assessing the PBI over a 20-year period found that the stability of the instrument did not seem to be affected by the passage of time (Murphy, Wickramaratne, & Weissman, 2010). Although actual parental bonding or attachment in childhood is best estimated using observational methods during childhood, this kind of data is rarely available except in long-running longitudinal studies. While the PBI more accurately taps into working models of attachment and bonding, the PBI provides a stable instrument for approximating the quality of the remembered early parent–child relationship. A further limitation in this study was that analyses were not split by respondent gender. Rather, large differences were found for gender in relation to parental bonding that it is recommended that any further studies using the PBI take into account the differences for gender found in this study and split future analyses by gender.

It would be of interest in future studies to examine the association of parental bonding styles with psychopathology and other outcomes to assess the utility of this typology in research and practice (i.e., identifying at-risk individuals). It would also be of interest to assess the convergence of PBI bonding styles and attachment categorizations. PBI dimensions have previously been associated with the Adult Attachment Interview (AAI) (Manassis, Owens, Adam West, & Sheldon-Keller, 1999), and it would be of interest to see whether and in what way these PBI categories converge with AAI categories and other categorical conceptualizations of attachment. This study has given an overview of a range of factors (in four domains: demographics, parental psychopathology, loss events, and childhood contextual factors), which appear to be associated with parental bonding style. As this article cannot provide an in-depth analysis of these associations, there is merit in further analysis of these associations and their possible implications. Finally, this study has not investigated interactions between maternal and paternal bonding styles, which may be an important consideration in research assessing the associations of bonding styles with other factors.
In conclusion, this study has demonstrated that a person-centered approach to the short PBI distinguishes qualitatively different groups of people in the population. The short PBI is a compact instrument with which to assess parental bonding and especially “affectionless control” in the population, and may be useful as a screen for bonding-related problems.

This typology may have broad utility in future research, taking into account the effect of parent–child bonding.

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