

# Different Forms of Biological Fatherhood and their Association with Symptoms of Psychopathology

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## Abstract

While the effects of maternal psychopathology on children are well researched, few studies have addressed paternal psychopathology. We provide estimates of self-reported symptoms of psychopathology across different forms of biological fatherhood, and investigate the association between paternal psychopathology and children's mental health. In an online survey,  $N = 2,590$  biological fathers living in stable or blended families as well as single or separated fathers filled out the Brief Symptom Inventory-18 (BSI-18, Spitzer et al., 2011), indicated the presence or absence of a self-reported mental disorder, and judged their children's mental health. Fathers living in stable families reported lower levels of psychopathological symptoms compared to single and separated fathers. Symptoms of depression and anxiety were negatively associated with fathers' judgment of their children's mental health. High levels of psychopathological symptoms were much more frequent than self-reported mental disorders, suggesting a need to extend the reach of mental health services.

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Fatherhood, mental disorder, psychopathology, family structure, children's mental health, familial transmission

**Introduction**

The offspring of parents affected by psychopathology are at high risk of adverse health outcomes (Barker et al., 2017), and these effects can persist long into adulthood. Indeed, a study that followed the offspring of depressed parents found increased morbidity, lower overall functioning, and a higher risk of psychopathology even after 30 years (Weissman et al., 2016). While the effects of maternal psychopathology are well researched, the role of the father was long neglected (Phares et al., 2005). In contrast to Anglo-American countries, where there is a growing body of literature unveiling the adverse effects of paternal psychopathology, research in European countries, and especially German-speaking countries, is scarce (Marinovic & Seiffge-Krenke, 2016). This is surprising, given that attitudes on fathering and the role of fathers are currently undergoing a fundamental change (Junke et al., 2016). By way of example, the introduction of paternal leave in many countries has led to increased paternal engagement (Tanaka & Waldfogel, 2007) and fathers are nowadays more involved in their children's lives despite work commitments (Mcgill, 2014).

Comparable to men in general, fathers may struggle with psychopathology. In a sample of outpatients in the United States, Nicholson et al. (1999) found that affective disorders were equally common in mothers and fathers, but that fathers displayed higher rates of substance abuse compared to mothers and substantially lower rates of psychotic disorders compared to non-fathers. Investigating 222 male inpatients in a German psychiatric hospital, Grube (2011) reported that patients with psychotic disorders were much less likely to have children, whereas patients with affective or substance use disorders were the most likely to have children. In a British nonclinical sample, Haycraft and Blissett (2008) reported that 16% of 107 highly educated fathers living with their partner and young children had elevated scores on general symptoms of psychopathology. Middeldorp et al. (2016) investigated self-reported psychopathology in parents of children who had been referred to child and adolescent psychiatric outpatient clinics in the Netherlands. Of the 530 fathers, 12.7% had scores in the clinical range for depression, and 6.1% showed clinically relevant scores for anxiety. In a British cross-sectional study, Davé et al. (2008) reported a prevalence of 8% for depressive disorders in a sample of fathers of four to six-year-old children.

One specific domain of paternal psychopathology that has received increasing attention over the last years is postpartum psychopathology, and in particular postpartum depression. According to meta-analytic data, the prevalence rate of paternal postnatal depression ranges from 2.3% to 8.4% (Glasser & Lerner-Gava, 2019). Postpartum psychosis or postpartum bipolar disorders are very rare (Bradley & Slade, 2011).

In general, associations are consistently found between paternal and children's psychopathology. Sweeney and Macbeth (2016) conducted a systematic review on the effects of paternal depression on emotional and behavioral outcomes in children and adolescents aged between 0 and 21 years, including 21 prospective studies from the United Kingdom, the United States, the Netherlands, and Australia, which mainly focused on toddlers and preschoolers. Across the studies, a small to moderate association emerged between paternal depression and offspring outcomes. In the studies that controlled for maternal depression, paternal depression was still independently associated with more negative offspring outcomes. Moreover, Reeb et al. (2010) found that paternal depressive symptoms predicted 13-year-olds' self-reported depressive symptoms one year later (small to moderate effect) beyond the effects of maternal depressive symptoms. In a cross-sectional study in a general population sample of Dutch adolescent girls, perceived paternal psychopathology was mildly associated with symptoms of depression and anxiety beyond the effects of perceived maternal depression (Rasing et al., 2015). The cross-sectional study of Cummings et al. (2005) found a mild to moderate association between paternal depressive symptoms and children's internalizing and externalizing behavior in a community sample of preschool-aged children in the United States.

Two other prospective studies found that paternal depression was a stronger predictor of children's psychopathology than maternal depression: In a study by Tichovolsky et al. (2016), paternal depressive symptoms predicted subsequent father- and mother-reported depressive symptoms in children aged three years. However, depressive symptoms in children did not predict subsequent depressive symptoms in fathers. In a study by Papp (2012), paternal depressive symptoms predicted changes in self-reported depressive symptoms in children from the age of 11 to 15 years.

In contrast to the findings outlined earlier, several studies failed to confirm an association between paternal and children's psychopathology. In a Norwegian cohort study, Narayanan and Nærde (2016) investigated paternal depressive symptoms assessed when the children were six months old. Paternal depressive symptoms did not predict child behavior problems at 48 months. Davé et al. (2008) reported mixed results in a cross-sectional study in the United Kingdom: After controlling for confounding variables,

paternal major depression was only associated with prosocial behavior and peer problems, and not with emotional problems in four to six-year-old children. In a large and nationally representative US study including children from married and particularly from unmarried parents (Fragile Families and Child Wellbeing Study), Meadows et al. (2007) did not find an association between paternal major depressive or generalized anxiety disorder (based on a diagnostic interview) and anxious/depressed behavior problems, attention deficit disorder or oppositional defiant disorder in children aged three years. Paternal depression or anxiety only had an adverse effect on children's anxious/depressed behaviors if the affected father was co-resident and the mother also had a diagnosis of depression or generalized anxiety.

Furthermore, paternal psychopathology is reported to be associated with higher levels of anxiety disorders in children. Cooper et al. (2006) investigated anxiety in fathers of children with anxiety disorders and a control sample of fathers of healthy children in the United Kingdom. In the healthy group, 20.6% of the fathers reported a lifetime anxiety disorder and 14.7% reported a current anxiety disorder. In the clinical group, by contrast, 45.1% of fathers reported a lifetime anxiety disorder and 27.5% a current anxiety disorder, predominantly social phobia and generalized anxiety disorder. Moreover, 3.9% of the fathers in the clinical group reported current major depression and 33.3% reported lifetime major depression, while no fathers in the control group reported current major depression and 14.7% reported lifetime major depression.

Although there are numerous protective and risk factors for children's psychopathology, few of these factors actually mediate the association between paternal and children's psychopathology. Neither family income nor paternal education is consistently associated with children's psychopathology. While some evidence shows beneficial effects of higher income and paternal education (Bradley & Corwyn, 2002; Reising et al., 2013; Slopen et al. 2010), other studies did not find this effect (Murdock et al., 2018; Weitzman et al., 2011). Furthermore, parental age does not appear to be associated with children's emotional and behavior problems (Boivin et al., 2009). Paternal physical health has been found to be associated with children's psychopathology, but does not mediate the association between paternal and children's psychopathology (Weitzman et al., 2011).

Relationship disharmony has been associated with paternal depression even after controlling for maternal depression (Ramchandani et al., 2011). Moreover, marital conflict has been found to be independently associated with children's emotional and conduct problems (Hanington et al., 2011) and children's internalizing and externalizing behavior (Cummings et al.,

2005). Concerning the presence of more than one romantic relationship (“polyamory” or “open relationship/marriage”), there is no published evidence reporting adverse effects of polyamory on children’s psychopathology (Bevacqua, 2018).

Child care is an increasingly important reason why fathers work part-time. Fathers working part-time show higher levels of paternal involvement (Bünning, 2019). The beneficial effects of paternal engagement on children’s adjustment and development have been consistently demonstrated (Barker et al., 2017; Sarkadi et al., 2008). Yet, the scarce research on the effects of paternal work hours on children’s psychopathology has produced mixed evidence. Voydanoff (2004) did not find a significant association between father’s work-hours (i.e. the actual hours worked in part-time and full-time jobs) and adolescents’ internalizing and externalizing behavior. In contrast, Johnson et al. (2013) found that children of fathers working part-time showed less internalizing and externalizing behavior than fathers working long hours. Children’s well-being was found to be poorer in nonresident father households, although not if the mother had re-partnered, and this association was primarily mediated by income. (Rogers, 2016). The presence of siblings has been associated with fewer emotional and behavior problems, especially if age differences between siblings are small (Grinde & Tambs, 2016).

The age of onset of psychopathology is usually in adolescence or early adulthood (Jacobi et al., 2004), with prevalence rates of depression in 13–18-year-olds being twice as high as in children under 13 years (5.6% vs. 2.8%, Jane Costello et al., 2006). Accordingly, in a US nationally representative sample, Weitzman et al. (2011) found that higher age (12–17 vs. 5–11 years) was mildly associated with emotional and behavioral problems, whereas another study found that children’s age was not associated with depressive symptoms in children aged 8–12 years (Murdock et al., 2018). Finally, there is an important overlap between physical health and mental health outcomes in children and adolescents (Merikangas et al., 2015).

Although fatherhood is mostly conceived of as biological fathers living with their children, there are other forms of fatherhood (Eggebeen & Knoester, 2001). Recently, we defined four forms of biological fatherhood: (a) fathers with stable families living with their biological children and current partner or wife; (b) separated fathers living completely apart from or in part-time arrangements with their biological children from a previous partnership; (c) blended family fathers with biological and nonbiological children, or biological children from multiple partnerships from current and/or past partnership/s; and (d) single fathers with full-time co-resident children

and no cohabiting partner (Waldvogel & Ehlert, 2016). The latter group of single fathers represents the minority: Single fathers accounted for 10% of German single-parent families in 2009, and this number had even dropped from 13% in 1996 (Statistisches Bundesamt, 2010).

Previous research is thus subject to certain limitations: Studies either did not include forms of fatherhood other than biological fathers living in a stable family (e.g., Davé et al., 2008; Nath et al., 2016), or compared specific forms of fatherhood (e.g. stepfathers or single fathers) to married fathers with children from the current partnership only, rather than taking into account the full complexity of different forms of fatherhood (Meadows et al., 2007; Waldvogel, 2017).

Dykstra and Keizer (2009) reported that Dutch nonresident fathers displayed lower levels of psychological well-being than married fathers living with their children, but this difference was mostly attributable to the lack or loss of partnership or not being married. Moreover, in a large US-American sample of disadvantaged fathers, Knoester et al. (2007) found that nonresident fathers reported more depressive symptoms than resident fathers. In a German nationally representative study on prevalence rates of mental disorders, Helbig et al. (2006) found that single fathers were at much greater risk of displaying any mental, depressive, and substance use disorders than single mothers in particular and men in general. After controlling for confounding variables, three studies did not find differences between stepfathers and biological fathers in terms of depressive symptoms (Deater-Deckard et al., 1998; Eggebeen & Knoester, 2001; Evenson & Simon, 2005). Moreover, Meadows et al. (2007) reported that nonresident fathers showed significantly higher rates of major depression and generalized anxiety disorder compared to resident fathers. In sum, single fathers and nonresident fathers appear to be at greater risk of psychopathology compared to stepfathers and married fathers living with their children.

To summarize, the existing literature shows that not only mothers but also fathers are affected by psychopathology. Although only a small number of fathers are diagnosed with psychotic disorders, an important proportion of fathers struggles with affective and anxiety disorders, especially during the first years after the birth of a child. In most studies, paternal psychopathology was found to have detrimental effects on children's psychopathology and development, above and beyond the effects of maternal symptoms of psychopathology and other factors such as marital conflict. Moreover, few studies have reported estimates of symptoms of psychopathology in the comprehensive context of contemporary forms of fatherhood, that is, taking into account all types of family structures such as single, separated or blended-family fathers.

## *Aims of the Study*

The present study aims to elucidate the associations between fathers' self-reported symptoms of psychopathology and their judgment regarding the mental health of their children. We quantify symptoms of paternal psychopathology and self-reported diagnosed mental disorders as a function of the respective form of fatherhood. As we analyze data from a large number of fathers, the study contributes to closing the research gap with respect to psychopathology in fathers as opposed to mothers, and its association with children's mental health (Marinovic & Seiffge-Krenke, 2016).

We hypothesize that fathers in stable families show lower rates of self-reported mental disorders, and of self-reported symptoms of depression and anxiety, compared to blended family fathers, separated fathers, and single fathers. Moreover, we hypothesize that fathers' self-reported symptoms of depression, anxiety, somatization, and aggression are negatively associated with children's mental health as rated by fathers, above and beyond mediating factors such as relationship satisfaction and paternal engagement.

## **Method**

### *Sample*

Data were collected within the framework of a large online survey on fathers' well-being in German-speaking countries (Waldvogel & Ehlert, 2016). Inclusion criteria for the present study were being the father of at least one biological child and being in a relationship (committed relationship and cohabiting, committed relationship without cohabiting, or open relationship). Of the 4,262 participants who filled in the anonymous online survey, 2,791 participants met these criteria.

Of these 2,791 participants, 201 participants were excluded because they did not provide information on one or several of the following variables: household income (12), self-reported symptoms of psychopathology (137), age of the first child (2) and educational status (56). Thus,  $N = 2,590$  participants were included in the study.

The participants were assigned to one of the four forms of fatherhood defined earlier. The majority of participants ( $n = 1,971$ ) were fathers in stable families, 186 were separated fathers, 397 were blended family fathers, and 36 were single fathers. The assignment to the different forms of fatherhood was carried out previously by Waldvogel and Ehlert, 2017.

Ethical approval was provided by the local Ethics committee of the Faculty of Arts of the University of Zurich.

## Measures

**Brief Symptom Inventory (BSI-18).** Participants completed the BSI-18 (Spitzer et al., 2011), which assesses symptom severity on the subscales of Depression, Somatization and Anxiety, and is derived from the longer version of the questionnaire, the BSI-53 by Franke (2000). Each of the subscales consists of six items. The version used in the present study has demonstrated good reliability and validity (Spitzer et al., 2011). The five-item subscale Aggression was also added from the BSI-53. Cronbach's alpha in our study was .83 for the Depression scale, .73 for the Anxiety scale, .72 for the Somatization scale, and .79 for the Aggression scale.

Self-reported symptoms were classified as high levels of psychopathological symptoms of depression or anxiety if the participant had a score of 5 points or above on the respective BSI scale, according to the Franke's (2000) recommendations for identifying clinically relevant cases. In the present study, only the Depression and Anxiety subscales were used to identify clinically relevant cases, because these two scales relate specifically to symptoms of affective and anxiety disorders and because the Somatization subscale does not have good discriminatory power (Spitzer et al., 2011).

**Self-reported presence of a mental illness.** All participants indicated whether they suffer from a mental illness by responding to the question "*Do you suffer from a mental disorder which requires treatment?*" If they responded with "yes", they were asked to specify the nature of the mental disorder(s).

**Paternal engagement.** In order to avoid short-term distorting factors such as vacation, paternal engagement was assessed by asking participants to indicate the average number of *half-days per week* they had usually spent engaging in active contact with each of their children during the last 12 months (*none, 1–2 half-days, 3–4 half-days, 5–6 half-days, 7–8 half-days, 9–10 half-days, 11–12 half-days or 13–14 half-days*, coded on a scale from 1–8). Paternal engagement was aggregated across the children if the father had more than one biological child.

**Fathers' judgment of children's mental health.** Participants evaluated the mental health of their child/each of their children by answering the question "*In general, how would you evaluate the mental health of your child?*" on a 5-point Likert scale ranging from 1 (*poor*) to 5 (*excellent*).

**Relationship satisfaction.** Relationship satisfaction in regard to the current partnership was assessed using the mean score on the German version of the



seven-item Relationship Assessment Scale (RAS-V; Hendricks, 1988; Sander & Böcker, 1993). Participants provided information on several aspects of their relationship on a 5-point Likert scale ranging from 1 (*not satisfied at all*) to 5 (*very satisfied*). Cronbach's alpha in our study was .91.

*Type of relationship.* The participants were asked to indicate the nature of their couple relationship. Of the  $N = 2,590$  participants, 59 were in an open relationship, 138 in a committed, noncohabiting relationship, and 2,393 were in a committed, cohabiting relationship.

*Sociodemographic data.* The participants were asked to provide information on their own age, family income, and socio-economic and socio-educational status as well as the number of hours they worked per week expressed in percent (full-time equivalent, FTE).

*Child characteristics.* The participants indicated how many biological children they had as well as the sex and age of each child. The age of the children was aggregated across all children for each father (mean age). The age range indicating the span between the youngest and the oldest child was used to account for age differences between siblings.

*Child residency.* Fathers provided information about co-residency with each of their children. Response options were “*do not live together with the child*” (coded as 1) “*partly live together with the child*” (coded as 2) or “*live together with the child*” (coded as 3). If the father had more than one biological child, co-residency with the child was aggregated by calculating the mean value across all children per father, resulting in a score ranging from 1 to 3.

*Physical health of the child.* Fathers rated the physical health of each child on the same 5-point Likert scale used for the mental health of the child, ranging from 1 (*poor*) to 5 (*excellent*), although with slightly different wording (“*In general, how would you evaluate the physical health of your child?*”). If the father had more than one biological child, the physical health of the child was aggregated across the children, also resulting in a score ranging from 1 to 5.

*Physical health of the father.* Participants were able to evaluate their physical health by answering the question “*In general, how would you evaluate your own physical health?*” on a 5-point Likert scale ranging from 1 (*poor*) to 5 (*excellent*).

## Data Analysis

Data were analyzed using R Version 3.3.2 (R Core Team, 2016). In order to provide estimates of self-reported symptoms of psychopathology, we analyzed the complete sample and the different subgroups of fatherhood with regard to potentially clinically relevant cases of depression and anxiety using the respective BSI scales and information on self-reported diagnosed mental disorders.

In a second step, we investigated the association of paternal self-reported symptoms of psychopathology with the father's judgment of his child's mental health while controlling for confounding variables such as number of biological children, age of the father, socio-educational status, relationship satisfaction, symptoms of aggression and somatization, FTE, the physical health of the father, the children's physical health, and the age of the children as well as paternal engagement. The categorical variables socio-educational status and type of relationship were entered as dummy-coded variables.

## Results

The vast majority of the total sample of fathers came from three Central European states. Most participants were from Switzerland (58.84%), followed by Germany (23.59%), Austria (14.36%), and other countries (3.20%) such as Italy. Concerning education, only 0.34% of the participants did not have any school-leaving certificate, 1.19% had completed mandatory school education, 24.20% had completed professional training, 14.55% had a technical diploma, 7.64% had a general qualification for university entrance, and 52.04% had a university degree. Compared to the general population, the sample had a higher socio-economic status (Eurostat, 2015). Further details for each form of fatherhood are reported in Table 1.

There was a significant effect of the form of fatherhood on the mean age of the children,  $F(3, 2586) = 66.66, p < .001$ . Bonferroni tests showed that the mean age of the children was lower in fathers living in stable families compared to separated biological fathers ( $p < .001$ ), blended family fathers ( $p < .001$ ), and single fathers ( $p < .001$ ). The form of fatherhood had a significant effect on the age of the father,  $F(3, 2586) = 41.84, p < .001$ . Bonferroni tests indicated that the age of the father was lower in fathers living in stable families compared to separated biological fathers ( $p < .001$ ), blended family fathers ( $p < .001$ ), and single fathers ( $p < .05$ ). Providing incomplete data was not associated with the form of fatherhood ( $\chi^2(3) = 2.06, p > .05$ ) or with the presence of a self-reported diagnosis of a mental disorder ( $\chi^2(1) = 0.65, p > .05$ ).

**Table 1.** Sample Description with Means and Standard Deviations of the Complete Sample and by Different Forms of Fatherhood.

| Variables                                     | Total     |  | Biological Fathers with Stable Families |  | Biological Fathers Separated |  | Blended Family Fathers |  | Single Fathers   |  |
|---|-----------|--|---|--|------------------------------|--|------------------------|--|------------------|--|
|   | N = 2,590 |  | N = 1,971                               |  | N = 186                      |  | N = 397                |  | N = 36           |  |
| Age of the father                             |           |  |   |  |                              |  |                        |  |                  |  |
| M   | 42.40     |  | 41.18                                   |  | 47.32                        |  | 45.85                  |  | 46.05            |  |
| SD  | 10.27     |  | 9.85                                    |  | 10.97                        |  | 10.74                  |  | 6.34             |  |
| Range   | 19-80     |  | 19-80                                   |  | 26-80                        |  | 24-78                  |  | 24-57            |  |
| Education <sup>a</sup>                        |           |  |   |  |                              |  |                        |  |                  |  |
| No school certificate                         | 0.37%     |  | 0.10%                                   |  | 0.53%                        |  | 1.25%                  |  | 2.77%            |  |
| Mandatory school education                    | 1.19%     |  | 0.71%                                   |  | 2.15%                        |  | 3.02%                  |  | 2.77%            |  |
| Professional training                         | 24.20%    |  | 22.47%                                  |  | 26.34%                       |  | 31.73%                 |  | 25.00%           |  |
| Technical diploma                             | 14.55%    |  | 14.35%                                  |  | 17.20%                       |  | 14.35%                 |  | 13.88%           |  |
| General qualification for university entrance | 7.64%     |  | 7.15%                                   |  | 6.45%                        |  | 10.57%                 |  | 8.33%            |  |
| University degree                             | 52.04%    |  | 55.20%                                  |  | 47.31%                       |  | 39.04%                 |  | 47.22%           |  |
| Household income <sup>b</sup>                 |           |  |   |  |                              |  |                        |  |                  |  |
| M   | 7364.98   |  | 7755.91                                 |  | 6316.99                      |  | 6023.92                |  | 6165.26          |  |
| SD  | 4585.17   |  | 4527.64                                 |  | 4659.62                      |  | 4328.61                |  | 4723.76          |  |
| Range   | 0-44,000  |  | 0-44,000                                |  | 500-30,000                   |  | 242.95-26,000          |  | 443.39-24,295.43 |  |
| Full-time equivalent <sup>c</sup>             |           |  |   |  |                              |  |                        |  |                  |  |
| M   | 4.47      |  | 4.52                                    |  | 4.42                         |  | 4.28                   |  | 4.33             |  |
| SD  | 1.09      |  | 1.04                                    |  | 1.21                         |  | 1.30                   |  | 0.95             |  |
| Range   | 1-5       |  | 1-5                                     |  | 1-5                          |  | 1-5                    |  | 2-5              |  |
| BSI-Aggression <sup>d</sup>                   |           |  |   |  |                              |  |                        |  |                  |  |
| M   | 2.19      |  | 2.15                                    |  | 2.22                         |  | 2.35                   |  | 2.19             |  |
| SD  | 2.50      |  | 2.49                                    |  | 2.59                         |  | 2.54                   |  | 2.02             |  |
| Range   | 0-20      |  | 0-20                                    |  | 0-17                         |  | 0-15                   |  | 0-9              |  |

(continued)

Table 1. (continued)

| Variables  | Total<br>N = 2,590 | Biological Fathers<br>with Stable Families<br>N = 1,971 | Biological Fathers<br>Separated<br>N = 186 | Blended<br>Family Fathers<br>N = 397 | Single<br>Fathers<br>N = 36 |
|--|--------------------|---|--|--------------------------------------|-----------------------------|
| <b>BSI-Somatization<sup>e</sup></b>              |                    |   |  |                                      |                             |
| M  | 1.29               | 1.13  | 1.95                                       | 1.74                                 | 1.42                        |
| SD   | 2.14               | 1.81  | 3.40                                       | 2.75                                 | 1.63                        |
| Range  | 0-24               | 0-24  | 0-20                                       | 0-19                                 | 0-6                         |
| <b>BSI-Anxiety<sup>f</sup></b>                   |                    |   |  |                                      |                             |
| M  | 2.32               | 2.19  | 3.01                                       | 2.58                                 | 2.90                        |
| SD   | 2.50               | 2.31  | 3.29                                       | 2.90                                 | 2.54                        |
| Range  | 0-24               | 0-24  | 0-15                                       | 0-16                                 | 0-10                        |
| <b>BSI-Depression<sup>g</sup></b>                |                    |   |  |                                      |                             |
| M  | 1.86               | 1.67  | 2.94                                       | 2.28                                 | 2.08                        |
| SD   | 2.79               | 2.45  | 4.09                                       | 3.47                                 | 1.97                        |
| Range  | 0-23               | 0-21  | 0-23                                       | 0-22                                 | 0-9                         |
| <b>Relationship satisfaction<sup>h</sup></b>     |                    |   |  |                                      |                             |
| M  | 4.13               | 4.15  | 4.09                                       | 4.09                                 | 4.01                        |
| SD   | 0.67               | 0.64  | 0.77                                       | 0.72                                 | 0.75                        |
| Range  | 1.14-5.00          | 1.42-5.00   | 1.85-5.00                                  | 1.14-5.00                            | 1.42-5.00                   |
| <b>Physical health of the father<sup>i</sup></b> |                    |   |  |                                      |                             |
| M  | 3.50               | 3.53  | 3.44                                       | 3.34                                 | 3.41                        |
| SD   | 0.78               | 0.77  | 0.79                                       | 0.81                                 | 0.93                        |
| Range  | 1-5                | 1-5   | 2-5  | 1-5                                  | 2-5                         |
| <b>Number of biological children</b>             |                    |   |  |                                      |                             |
| M  | 1.85               | 1.79  | 1.70                                       | 2.22                                 | 1.94                        |
| SD   | 0.87               | 0.81  | 0.81                                       | 1.08                                 | 0.71                        |
| Range  | 1-8                | 1-8   | 1-6  | 1-6                                  | 1-3                         |

(continued)

**Table 1. (continued)**

| Variables   | Total     | Biological Fathers<br>with Stable Families | Biological Fathers<br>Separated | Blended<br>Family Fathers | Single<br>Fathers |
|---|-----------|--|---------------------------------|---------------------------|-------------------|
|   | N = 2,590 | N = 1,971                                  | N = 186                         | N = 397                   | N = 36            |
| Paternal engagement <sup>l</sup>                  |           |  |                                 |                           |                   |
| M   | 3.30      | 3.42                                       | 2.24                            | 3.07                      | 4.22              |
| SD  | 2.07      | 2.04                                       | 2.04                            | 2.00                      | 2.29              |
| Range   | 1-8       | 1-8  | 1-8                             | 1-8                       | 1-8               |
| Mean age of all children                          |           |  |                                 |                           |                   |
| M   | 8.90      | 7.47                                       | 15.33                           | 12.53                     | 13.52             |
| SD  | 9.77      | 9.22                                       | 10.57                           | 10.06                     | 5.76              |
| Range   | 0-53      | 0-53                                       | 0-49                            | 0-50                      | 2.5-24.00         |
| Age range between children <sup>k</sup>           |           |  |                                 |                           |                   |
| M   | 2.82      | 2.10                                       | 1.69                            | 6.89                      | 3.38              |
| SD  | 4.07      | 2.60                                       | 2.10                            | 7.19                      | 3.84              |
| Range   | 0-31      | 0-29                                       | 0-12                            | 0-31                      | 0-14              |
| Mean physical health of all children <sup>l</sup> |           |  |                                 |                           |                   |
| M   | 4.31      | 4.39                                       | 4.03                            | 4.07                      | 4.13              |
| SD  | 0.65      | 0.60                                       | 0.70                            | 0.73                      | 0.76              |
| Range   | 1-5       | 1-5  | 1-5                             | 1-5                       | 2.66-5            |
| Mean mental health of all children <sup>m</sup>   |           |  |                                 |                           |                   |
| M   | 4.21      | 4.34                                       | 3.59                            | 3.89                      | 3.78              |
| SD  | 0.72      | 0.62                                       | 0.91                            | 0.81                      | 0.66              |
| Range   | 1-5       | 1-5  | 1-5                             | 1.5-5                     | 2.5-5             |
| Type of relationship                              |           |  |                                 |                           |                   |
| Committed cohabiting relationship                 | 92.39%    | 98.93%                                     | 52.68%                          | 86.90%                    | 0%                |
| Committed noncohabiting relationship              | 5.32%     | 0.5%                                       | 32.25%                          | 9.82%                     | 80.55%            |

(continued)

Table 1. (continued)

| Variables                                   | Total     | Biological Fathers with Stable Families | Biological Fathers Separated | Blended Family Fathers | Single Fathers |
|---|-----------|---|------------------------------|------------------------|----------------|
|   | N = 2,590 | N = 1,971                               | N = 186                      | N = 397                | N = 36         |
| Open relationship                           | 2.27%     | 0.55%                                   | 15.05%                       | 3.27%                  | 19.44%         |
| Co-residency with all children <sup>n</sup> |           |   |                              |                        |                |
| M   | 2.60      | 2.82                                    | 1.43                         | 2.06                   | 2.68           |
| SD  | 0.70      | 0.52                                    | 0.49                         | 0.76                   | 0.43           |
| Range                                       | 1–3       | 1–3                                     | 1–2                          | 1–3                    | 1.66–3         |

Note. <sup>a</sup>Participants indicated their educational status on a scale from 1 to 6 (no school certificate, mandatory school education, professional training, technical diploma, and general qualification for university entrance to university degree). <sup>b</sup>Household income per month in Swiss Francs (CHF). <sup>c</sup>Full-Time Equivalent in percent, i.e. working full- or part-time (0% [1] up to 25% [2], up to 50% [3], up to 75% [4], up to 100% [5]). <sup>d</sup>Aggression subscale from the Brief Symptom Inventory (BSI, Franke, 2000). <sup>e-g</sup>Respective Brief Symptom Inventory (BSI, Franke, 2000) subscales of the German Version of the BSI-18 (Spitzer et al., 2011). <sup>h</sup>measured by the Relationship Assessment Scale (RAS-V, Sander & Böcker, 1993). <sup>i</sup>self-evaluation of the physical health of the father from 1 (poor) to 5 (excellent) <sup>j</sup>Aggregated across all children. Participants were asked to indicate how often they had had active contact with their children during the last 12 months on a 0–7 scale: 0 (never), 1 (on 1–2 half-days), 2 (on 3–4 half-days), 3 (on 5–6 half-days), 4 (on 7–8 half-days), 5 (on 9–10 half-days), 6 (on 11–12 half-days), or 7 (on 13–14 half-days). <sup>k</sup>Age span between the youngest and oldest biological child. <sup>l-m</sup>Evaluation of the physical and mental health made by the father on a scale ranging from 1 (poor) to 5 (excellent) aggregated across all biological children of the participant. <sup>n</sup>Co-residency with the child(ren) aggregated across children. Participants indicated if they live together with the child on a 1–3 scale: 1 (no), 2 (partly) or 3 (yes).

Table 2 provides an overview of the number of participants as a function of the form of fatherhood and the presence of a self-reported diagnosed mental disorder, which were significantly associated with one another ( $\chi^2(3) = 15.02, p < .01$ ).

The proportion of participants displaying BSI Depression and Anxiety scores above the suggested cut-off score of 5 points is reported in Table 2. The form of fatherhood was associated with a BSI Depression score above the cut-off ( $\chi^2(3) = 26.68, p < .001$ ) and with a BSI Anxiety score above the cut-off ( $\chi^2(3) = 21.74, p < .001$ ).

The fathers' judgments on the mental health of their children are located on level 1 (child level). These judgments were nested in the different fathers on level 2 (father level). The fathers' judgments on the mental health of their children were nonindependent in fathers,  $ICC(1) = .47, F(2589, 2216) = 2.67, p < .001, ICC(2) = .65$ . The fathers (level 2) were also nested within the different forms of fatherhood (level 3). Moreover, on the level of the four different forms of fatherhood, the fathers' judgments on their children's mental health were nonindependent,  $ICC(1) = .10, F(3, 4802) = 139.00, p < .001, ICC(2) = .62$ . Nesting the fathers' judgments in the different fathers and nesting these fathers in the different forms of fatherhood fitted the data significantly better than nesting the data only in the different fathers,  $\Delta\chi^2_{(2)} = 39.10, p < .001$ .

In a first step, only the BSI Depression scale was used as predictor to establish a baseline association between self-reported symptoms of depression and paternal judgment of children's mental health. This mixed model fitted the data significantly better than an ordinary least squares regression (OLS),  $\Delta\chi^2_{(2)} = 637.25, p < .001$ . A model with random intercepts was used. The BSI Depression scale was a significant predictor but with a small effect size,  $b = -0.04, t(2585) = -8.71, p < .001, Pseudo-R^2 = .019$ . Table 3 displays the results of the full hierarchical linear regression model predicting paternal judgment of children's mental health by self-reported symptoms of psychopathology of the father and control variables. The BSI Depression scale emerged as a significant negative predictor,  $b = -0.01, t(2564) = -2.08, p < .05$ , as did the BSI Anxiety scale,  $b = -0.01, t(2564) = -2.33, p < .05$  and the BSI Aggression scale  $b = -0.01, t(2564) = -2.49, p < .05$ . The BSI Somatization scale did not emerge as a statistically significant predictor.

## Discussion

The aim of this study was to assess self-reported symptoms of paternal psychopathology in men living in different forms of fatherhood. We further

**Table 2. Proportion of Participants With and Without Self-Reported Mental Disorders as a Function of the Form of Fatherhood and Proportion of Participants Scoring High on Self-Reported Symptoms of Psychopathology as a Function of the Presence of a Self-Reported Mental Disorder and the Form of Fatherhood.**

| Form of fatherhood                               | Proportion of Participants with and without a Self-reported Mental Disorder |                                   |      | Proportion of Participants Displaying a Score on the BSI Depression Scale of 5 Points or Above as a Function of the Presence of a Self-reported Mental Disorder |                                   |    | Proportion of Participants Displaying a Score on the BSI Anxiety Scale of 5 Points or Above as a Function of the Presence of a Self-reported Mental Disorder |                                   |  |     |       |    |        |     |       |
|--|---|-----------------------------------|------|---|-----------------------------------|----|--|-----------------------------------|--|-----|-------|----|--------|-----|-------|
|  | No self-reported Mental Disorder  | Any Self-reported Mental Disorder | N    | No self-reported Mental Disorder  | Any Self-reported Mental Disorder | N  | No self-reported Mental Disorder   | Any self-reported Mental Disorder | With and without Self-reported Mental Disorder |     |       |    |        |     |       |
|  | %   | %                                 | N    | %   | %                                 | N  | %  | %                                 | %  |     |       |    |        |     |       |
| Biological father with stable family (N = 1,971) | 97.36   | 53                                | 2.68 | 175   | 9.12                              | 26 | 49.05  | 201                               | 10.19  | 221 | 11.52 | 26 | 49.05  | 247 | 12.53 |
| Biological father separated (N = 186)            | 92.47   | 14                                | 7.52 | 30  | 17.44                             | 8  | 57.14  | 38                                | 20.43  | 29  | 16.86 | 11 | 78.57  | 40  | 21.50 |
| Blended family father (N = 397)                  | 95.21   | 19                                | 4.78 | 50  | 13.22                             | 14 | 73.68  | 64                                | 16.12  | 56  | 14.81 | 17 | 89.47  | 73  | 18.38 |
| Single father (N = 36)                           | 94.44   | 2                                 | 5.55 | 1   | 2.94                              | 1  | 50.0   | 2                                 | 5.55   | 7   | 20.58 | 2  | 100.00 | 9   | 25.00 |
| All forms of fatherhood (N = 2590)               | 96.60   | 88                                | 3.39 | 256   | 10.23                             | 49 | 55.68  | 305                               | 11.77  | 313 | 12.50 | 56 | 63.63  | 369 | 14.24 |

Note. Participants were asked to indicate whether or not they suffer from a mental disorder. Percentages in the respective BSI scales refer to the proportion of participants displaying scores of 5 or above in relation to the number of participants of each form of fatherhood. E.g. 175 out of 1,918 (9.12%) participants being biological fathers with stable families without a self-reported mental disorder display a BSI depression score of 5 or above.



**Table 3.** Father's Judgment of the Mental Health of his Biological Children Predicted by Self-Reported Symptoms of Psychopathology of the Father and Control Variables (Full Model). Sample of Biological Fathers with Stable Families, Separated and Single Fathers and Fathers in Blended Families. Hierarchical Linear Model (HLM) with Random Intercept.

|  | Value    | Std. Error | Lower     | Upper     |
|--|----------|------------|-----------|-----------|
| (Intercept)  | 4.12***  | 0.07       | 3.98      | 4.25      |
| Committed relationship and cohabiting vs. committed relationship and noncohabiting | -0.08    | 0.04       | -0.17     | 0.01      |
| Committed relationship and cohabiting vs. open relationship                        | 0.02     | 0.06       | -0.10     | 0.15      |
| University degree vs. general qualification for university entrance                | > -0.01  | 0.03       | -0.07     | 0.06      |
| University degree vs. technical diploma  | -0.03*   | 0.02       | 0.08      | 0.02      |
| University degree vs. professional training  | -0.06*** | 0.02       | 0.11      | -0.02     |
| University degree vs. mandatory school education                                   | -0.07    | 0.09       | -0.25     | 0.14      |
| University degree vs. no school certificate  | 0.16     | 0.14       | -0.12     | 0.44      |
| Residency of the children  | 0.07***  | 0.02       | 0.03      | 0.12      |
| Number of biological children  | -0.06**  | 0.01       | -0.09     | -0.03     |
| Paternal engagement  | 0.01*    | < 0.01     | 3.01e-03  | 0.02      |
| Age of the father  | < 0.01   | < 0.01     | -2.66e-03 | 5.10e-03  |
| Household income   | < 0.01   | < 0.01     | -1.24e-06 | 7.49e-06  |
| Relationship satisfaction  | 0.06**   | 0.01       | 0.03      | 0.09      |
| BSI Aggression   | -0.01*   | < 0.01     | -0.02     | -2.60e-03 |
| BSI Somatization   | < 0.01   | < 0.01     | -1.26e-04 | 0.02      |
| BSI Anxiety  | -0.01*   | < 0.01     | -0.02     | -2.06e-03 |
| BSI Depression   | -0.01*   | < 0.01     | -0.01     | -6.21e-04 |
| Full-time equivalent   | -0.01    | < 0.01     | -0.03     | -4.32e-04 |
| Physical health of the father  | 0.02*    | 0.01       | 3.13e-03  | 0.05      |
| Children age range   | < 0.01   | < 0.01     | -2.47e-03 | 0.01      |
| Children mean age  | > -0.01  | < 0.01     | -5.89e-03 | 3.61e-03  |
| Physical health of the children  | 0.68***  | 0.01       | 0.65      | 0.71      |

95% CI

Note. Pseudo-R<sup>2</sup> = .40, \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

intended to investigate associations between symptoms of paternal psychopathology and fathers' judgment of their biological children's mental health. To our knowledge, this is the first large-scale online study conducted in German-speaking countries to confirm the association between self-reported symptoms of paternal psychopathology and the mental health of the father's child(ren) as judged by the father.

Data analysis revealed that self-reported mental disorders and symptoms of psychopathology are reported by an important proportion of fathers. All forms of fatherhood deviating from fathers living in stable families are consistently associated with higher rates of self-reported mental disorders and self-reported symptoms of psychopathology. Moreover, we found a significant discrepancy between reporting a mental disorder and the reported symptoms of psychopathology: The number of fathers *without* self-reported mental disorders displaying high levels of self-reported symptoms of psychopathology was *five–six* times higher than the number of fathers, *with* a self-reported mental disorder displaying high levels of self-reported symptoms of psychopathology. Although it is plausible that some fathers with diagnosed mental disorders simply did not report them (e.g. due to concerns about data security), some fathers may not know or suspect that they actually suffer from a mental disorder due to a lack of awareness of mental disorders (Angst et al., 2016). Furthermore, men may have difficulties in recognizing depressive symptoms in themselves because of traditional masculinity roles (Veskrna, 2010).

In the nonclinical UK sample of rather highly educated fathers of preschool-aged children investigated by Haycraft and Blisset (2008), 16% of the fathers displayed values above the *T*-Value of 63 on the general symptom index of the BSI-53, whereas in our study, 10.19% scored above this value on the Depression scale and 12.53% on the Anxiety scale. Unfortunately, the authors of the former study did not provide information about how many fathers scored above the *T*-Value of 63 on the Depression and Anxiety scales, but the distribution of the values on GSI, Depression, and Anxiety are similar to one another. This indicates that the rates of high levels of self-reported symptoms of depression and anxiety in our sample are lower than in the study by Haycraft and Blisset (2008), which may be due to the higher age of the children in our sample.

Meadows et al. (2007) found differences between the types of fatherhood in their sample of fragile families using diagnostic interviews: About 12% of married or cohabiting fathers were diagnosed with major depression or generalized anxiety disorder, whereas 18.5% of involved nonresident fathers and 25.5% of noninvolved nonresident fathers had such a diagnosis. Likewise, in our study, biological fathers with stable families reported fewer diagnosed

mental disorders (2.7%) than separated fathers (7.5%). Separated fathers were approximately twice as likely to display high levels of self-reported symptoms of depression (20.4% vs. 10.1%) and anxiety (21.5% vs. 12.5%) compared to fathers with stable families.

Self-reported symptoms of depression, anxiety, and aggressiveness were associated with fathers' judgment of their children's mental health, even when controlling for numerous potentially mediating variables such as family income, physical health of the children, and paternal relationship satisfaction. Although we did not have any information about the psychopathology of the father's partner, relationship satisfaction may partly account for the partner's psychopathology, since relationship satisfaction is affected by the partner's psychopathology (Whisman et al., 2004).

The association between self-reported symptoms of depression and fathers' judgment of children's mental health corresponded to a small effect. Compared with other studies (e.g. Cummings et al., 2005), this is in the lower range of effect sizes, whereas a small number of cross-sectional studies did not find a significant association (Davé et al., 2008; Malmberg & Flouri, 2011). Our findings are comparable with the cross-sectional Dutch study by Rasing et al. (2015), which found a small association between paternal and adolescents' symptoms of psychopathology, although the authors assessed adolescents' psychopathology based on self-report rather than parent report. In line with the findings of Cummings et al. (2005) and Hanington et al. (2011), relationship quality was a strong predictor in our study, but did not fully mediate the association between symptoms of paternal depression and fathers' judgment of children's mental health. In line with previous research, paternal education, children's residency with the father, paternal engagement, and father's and children's physical health were significantly and positively associated with children's mental health. Working part-time did not have beneficial effects on children's mental health, corroborating Voydanoff's (2004) findings. Also in our study, we did not find that being in an open relationship is associated with children's mental health (Bevacqua 2018). The positive relationship between household income and children's mental health was not significant, which is probably due to the fact that the majority of participating fathers already had a relatively high socio-economic status. A higher mean age of the children was negatively linked to children's mental health, whereas a higher age range between the children was positively associated with children's mental health, although both age range and mean age failed to reach statistical significance. This could be due to the liberal inclusion criteria, which resulted in the inclusion of some adult offspring, who display better mental health with higher age (Gustavson et al., 2018). Contrary to the findings of

Grinde and Tambs (2016), the number of biological children was negatively and significantly related to children's mental health. This finding may be explained by the increased number of stressors such as economic hardship in families with more children, especially after changes in the family structure as in blended families (Schramm & Adler-Baeder, 2012).

### *Strengths and Limitations of the Study*

Our study has three major strengths. First, it is a multi-national large-scale survey, which enables numerous mediating variables to be taken into account. Second, we explicitly investigated the fathers' own perspective, thus promoting much-needed equality, as fathers are a neglected societal group in research: Most studies are based on the mother's perspective and only include the father's perspective as a control variable rather than acknowledging the father as an equally competent source of information (Alakortes et al., 2017). Third, our study provides information about the association between paternal and children's psychopathology while taking into account contemporary forms of fatherhood, rather than merely focusing on fathers in stable families and therefore neglecting forms of fatherhood which deviate from this model.

Nevertheless, several limitations of the study need to be mentioned. Although single-item measures can be reliable and valid (Boer et al., 2004), the present findings may be limited by the use of single-item measures. While the use of the respective single-item measures made it possible to assess children's mental health and fathers' active contact with their children throughout different developmental stages of the children, the participating fathers may have held fairly different concepts regarding what constitutes children's mental health and active contact. However, the use of different questionnaires for different ages of the child would have complicated the comparability and interpretation of the results. Since we did not assess maternal psychopathology, it is not possible to investigate whether symptoms of paternal psychopathology predict fathers' judgment of their children's mental health beyond the effects of maternal psychopathology.

It is possible that in those fathers who were struggling with depressive symptoms, their judgment of their children's mental health was negatively biased by these depressive symptoms. This mechanism, which has been referred to as the depression-distortion hypothesis (Richters & Pelligrini, 1989), has been the subject of ongoing debate (Richters, 1992; Ordway, 2011). Indeed, Youngstrom et al. (1999) demonstrated such a small to moderate bias in mothers of preschool-aged children. Similarly, Gartstein et al. (2009) revealed a modest inflation bias of maternal depression on

mother-reported externalizing problems of sons and internalizing problems of daughters.

We found significant age differences between the mean age of the children of fathers in stable families and of the children of fathers with other forms of fatherhood, with children in stable families being about five to eight years younger. The higher rates of self-reported mental disorders and high levels of psychopathological symptoms in single, blended-family and separated fathers may be due to the higher age of their children. This would be in line with the finding that self-reported paternal depressive symptoms increase over the course of children's adolescence (Papp, 2012). These age differences may also reflect different stages in the course of the development of family structures, because individuals with poor mental health are at greater risk of union dissolution (Wade & Pevalin, 2004). Given the cross-sectional nature of the present study, we cannot make any claims regarding selection processes. Fathers with good mental health outcomes may be more likely to stay in a stable family, resulting in better mental health outcomes in stable family fathers, as these families may not split up (Williams & Dunne-Bryant, 2006). Conversely, these stable families may not have been exposed to certain types of stress and strains such as unemployment, low educational, and/or socio-economic status or discrimination (Davé et al., 2008). The considerable differences in subsample size of the different forms of fatherhood also warrant attention. For example, the group of single fathers was very small, especially when compared to fathers in stable families. Because of this and the aforementioned possibility of selection processes, the generalizability of our findings may be limited, especially concerning single and separated fathers.

The nonrepresentative sample in this study showed a higher socio-economic and socio-educational status than the general population. Moreover, the sample was recruited using an internet-based approach, which may explain why this convenience sample differs from the general population. Although internet access is very high in central Europe, some individuals may have refrained from participating due to a lack of digital skills, which are in turn related to socio-educational status (OECD, 2019). Hence, our findings should be interpreted with caution, especially with respect to inpatient and outpatient populations with low socio-economic and/or socio-educational status.

### *Suggestions for Future Research*

Future research should try to overcome the methodological limitations of the present study by implementing both longitudinal designs and multiple sources

of information. For the latter, it would be useful to compare the views and perspectives of the father and the mother, given that both are likely to spend time with the child(ren) in similar situations (in contrast to teachers).

The assessment of the mental health of children and of fathers (and mothers) by multiple methods would be beneficial in two ways: First, it would result in a more valid and detailed picture, and second, it would contribute to resolving the controversy regarding the depression-distortion hypothesis (also in fathers). The reviews by Richters (1992) and Ordway (2011) have highlighted the importance of using multiple informants.

Future studies should endeavor to recruit participants from all societal contexts, especially socially disadvantaged individuals, in order to obtain samples that are representative of a certain societal subgroup or even nationally representative samples. As most previous studies did not include fathers in family structures other than stable families, it is important to take the family structure into account and to include a sufficient number of fathers living in blended families, single fathers, or separated fathers. Future studies might attempt to oversample single fathers because this form of single parenthood is relatively rare (Statistisches Bundesamt, 2010) and because these fathers may have specific needs (Junke et al., 2016).

### *Implications of the Study*

In line with previous studies, the present findings provide evidence of the detrimental effects of paternal psychopathology on children's psychopathology. It is important to sensitize the public, mental health professionals, and fathers (and of course men in general) with regard to paternal and male manifestations of psychopathology, especially depression (Olliffe & Phillips, 2008). In particular, postnatal screenings for psychopathology in fathers, as suggested by Nazareth (2011) and Sweeney & MacBeth (2016), would be useful to promote seeking treatment. Psychotherapeutic treatment is not only effective (e.g., Cuijpers et al., 2014; Stewart & Chambless, 2009; or Wampold et al., 2002) but also cost-efficient (Lazar, 2014). Therefore, increased treatment of fathers would be an economical and effective way to ameliorate the mental health outcomes of children, as is also the case for the treatment of mothers or of parents as an entity (Gunlicks & Weissman, 2008).

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The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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