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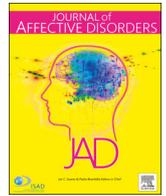


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Depression, anxiety, and guilt in mothers with burnout of preschool and school-aged children: Insight from a cluster analysis

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ABSTRACT

Introduction: The primary objective of this study is to identify the typology of exhausted mothers based on, depressive, anxiety, and guilt symptoms. And, secondarily, evaluate whether these profiles differ on parental stress, environmental stress, and parental burnout.

Methods: Five hundred and fifty French-speaking mothers suffering from exhaustion completed several questionnaires assessing parental stress, general perceived stress, maternal guilt, and depressive and anxious symptomatology. Results from two hundred and ten mothers with burnout symptoms were explored (mean age [SD] = 33.69 [5.1] years). In order to identify possible subgroups, a hierarchical cluster analysis was performed. **Results:** Three profiles were highlighted from the sample (Wilks' $\lambda = 0.156$, $p < .0001$): the first was characterized by high feelings of guilt (29.52%; $n = 62$), the second showed a dominance of anxiety symptoms and high feelings of guilt (36.19%; $n = 76$), and the fourth presented low levels of depression, anxiety, and feelings of guilt (23.3%, $n = 49$).

Discussion: These findings suggest different profiles of burned out mothers that vary according to severity of anxiety, depression, and guilt. That suggests that parental burnout, depression and anxiety are distinct disorders. This study also makes it possible to show the aggravating effect of guilt in the experience of burnout. Additional research is warranted as it is important to more carefully consider possible appropriate intervention strategies given the differing experiences of burned out mothers.

1. Introduction

Whereas the notion of parental burnout is a recent phenomenon, authors in the domain of professional burnout previously mentioned the probable existence of parental burnout in the 1980s (Freudenberger, 1974; Maslach and Jackson, 1981). Few studies have explored this domain, although interest in this topic has increased recently in the scientific literature (Le Vigouroux and Scola, 2018; Lebert-Charron et al., 2018; Mikolajczak et al., 2018; Sánchez-Rodríguez et al., 2018). These studies have shown that, as for employees, some parents experience burnout in their role as parents.

Similar to professional burnout, parental burnout has been defined as a three-dimensional syndrome (Maslach, 1998; Maslach and Jackson, 1981; Roskam et al., 2017). The first component, the core of burnout, is emotional exhaustion defined as a state of physical exhaustion characterized by feelings of being emotionally drained and overextended. The second component, emotional distance, corresponds to the parent's emotional distance from the child. Finally, decrease in personal

achievement refers to the disengagement and the lack of motivation felt by the parent with regard to his/her parental role. Although the three dimensions are similar to those defined in professional burnout, there are differences concerning the second dimension that correspond to the interpersonal approach of burnout. In the professional field this component is understood as a depersonalization of the relationship. Within the professional context, employees may depersonalize others (patients or clients) and may come to consider them as objects. In parental burnout, this dimension refers rather to an emotional distance between the parent and his child, it does not question however the love felt by the parent (Roskam et al., 2017).

Like professional burnout, parental burnout is stress-related (Zapf et al., 2001). The General Adaptation Syndrome (GAS) (Selye, 1946) posits that the long-term experience of stress contributes to the etiology of burn-out because the energy used to manage the stressful situation will globally deplete the resources of the patient in the long term. Perceived stress can predict levels of burnout (Meyer et al., 2015; Raedeke and Smith, 2004). In the specific case of parental

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burnout, Auriol-Bartro (2011) showed that mothers with high parental burnout scores reported significantly more stress than those with lower scores (according to the Burnout Measure Short version (BMS-10)).

Indeed, stress generated by lack of information regarding childhood disorders has been reported as a significant variable for burnout in parents with children experiencing difficulties (Koydemir and Tosun, 2009; Van't Hooft et Norberg, 2010; Vinayak and Dhanoa, 2017). Interventions targeted on these issues have shown noteworthy efficacy (Beheshtipour et al., 2016; Bilgin and Gozum, 2009; Lindström et al., 2016; van't Hooft and Norberg, 2010). According to Abidin (1990), parental stress can be influenced by different factors such as parental self-perceptions, perceptions of the child, and parent-child dysfunctional interaction. Parental distress refers to a feeling of incompetence, a lack of social support, and/or to the fact that the parent feels limited in his/her ability to be a parent. Difficulties concerning children are mainly linked to behavioral and emotional disorders, adaptation problems, or to a parent's inaccurate perception of his/her child's temperament. Finally, parent-child dysfunctional interaction refers to unsatisfied expectations of the parent and the lack of role reinforcement. Parental stress level is strongly associated with the responsibilities assigned to each parent in his or her parental role (Koegele et al., 1992).

With regard to psychopathological variables, burnout has generally been linked to depressive and anxious symptoms (Dyrbye et al., 2006). Nevertheless, the relationship between depression and burnout is not clearly established. Some studies have shown no overlap between the two disorders (Leiter and Durup, 1994; McKnight and Glass, 1995; Qiao and Schaufeli, 2011). If, for some authors, an increase in depressive symptoms could trigger the development of burnout over time (Barling and Macintyre, 1993); other studies highlight the overlap between depression and burnout (Bianchi et al., 2014, 2015). Moreover, an increase in depressive symptoms can predict an increase in burnout and the inverse relationship could be also possible (Toker and Biron, 2012).

A possible explanation for these contradictory results is the existence of subgroups of burnout (Van Dam, 2016). Several authors have suggested that burnout patients form a heterogeneous group that can be categorized into subtypes (Demerouti et al., 2005; Oosterholt et al., 2014; Tops et al., 2007). These types of burnout are most often referred to as *subclinical* and *clinical* burnout, which differ in terms of assessed symptom severity (burnout, fatigue, anxiety, and depression) (Oosterholt et al., 2014; Van Dam, 2016). The first burnout group includes individuals with mild burnout symptoms that do not need a pharmaceutical or medical intervention; the clinical group, however, refers to individuals who have a severe score of burnout and present comorbidity with other mental disorders (Van Dam, 2016). For several authors, the existence of burnout patient subgroups may be in line with phase models of burnout (Edelwich and Brodsky, 1980).

On the other hand, for Gil-Monte (2012) guilt feelings concerning specific behaviors and attitudes related to burnout are a symptom of exhaustion indicating a severe state of burnout. A recent study showed that mothers who were exhausted showed more signs of guilt than other mothers (Séjourné et al., 2018). In fact, compared to professional burnout, parental burnout has negative consequences on both parental and marital relationships; indeed it has a specific effect on increasing neglect and violent behavior towards children (Mikolajczak et al., 2018). While research is starting to examine factors related to burnout of parents with children without special needs (Mikolajczak et al., 2018) little is yet known about the signs allowing for early identification of this specific parental distress and possible interventions. For example, the few studies interested in evaluating interventions with exhausted parents have been conducted essentially on parents of children with special needs (Anclair et al., 2017; Beheshtipour et al., 2016; Bilgin et Gozum, 2009; Lindström et al., 2016; Van't Hooft et Norberg, 2010).

The main objective of this exploratory study is to explore clusters of depressive, anxious, and guilt symptoms in mothers with children aged 4–10 years of age, manifesting varying degrees of parental burnout.

Cluster analysis was used to identify homogenous groupings of mothers based on these variables. It was hypothesized that mothers with high levels of depression, anxiety, and guilt would have higher scores of burnout, parental stress and stress in other domains than mothers with low levels of distress.

2. Methods

2.1. Participants

Burnout mothers ($N = 210$) were recruited online through discussion groups (mean age [SD] = 33.69 [5.1] years). Among the 210 mothers suffering from burnout, 20% ($n = 42$), manifested severe burnout necessitating professional intervention. Most mothers were French (89.0%; $n = 187$), and the majority of participants (87.7%; $n = 185$) were married or living with a partner. Half of the mothers had two children (51.9%; $n = 109$) and 8.6% ($n = 18$) had a child with a disability. 65.7% ($n = 138$) of all participants were employed. Nearly half of mothers (45.2%; $n = 95$) reported experiencing financial difficulties. In terms of medical history, 52.9% ($n = 111$) of mothers manifested postnatal depression and 43.3% ($n = 91$) reported presenting psychological and/or somatic difficulties. Demographic characteristics of mothers are presented in Table 1.

2.2. Procedure

In 2015, 596 mothers responded to an online questionnaire on a web-based secured and encrypted survey (Lime Survey). They were recruited from discussion groups focusing on motherhood in general as well as groups providing help to mothers in difficulty. They were invited to participate in a study on the role of mothers and on the particular experience of motherhood. If they were interested in taking part in the study, the mothers were invited to a link leading to the

Table 1
Socio-demographic and psychological variables in a sample of 210 mothers with parental burnout symptoms.

	<i>n</i> (%)
Marital Status	
Two parents at home	157 (74.8%)
Single mother	25 (11.9%)
Blended family	28 (13.3%)
Number of children	
1 child	28 (13.3%)
2 children	109 (51.9%)
3 children or more	73 (34.6%)
Education level	
Without diploma	8 (3.8%)
Certificate of vocational proficiency	32 (15.2%)
French high school diploma	33 (15.7%)
2 years university degree	42 (20%)
3 years university degree	45 (21.4%)
4 years university degree and more	50 (23.8%)
Employment status	
Not currently working	95 (45.2%)
Employed	138 (65.7%)
Part-time employment	66 (47.8%)
Depressive symptomatology	
Absence of symptoms	87 (41.4%)
Probable anxious disorder	67 (31.9%)
Intense anxiety disorder	56 (26.7%)
Anxious symptomatology	
Absence of symptoms	34 (16.2%)
Probable anxious disorder	65 (31.0%)
Intense anxiety disorder	111 (52.9%)
Severity of mother burnout	
Presence of burnout	63 (30.0%)
High level of burnout	105 (29.1%)
Very high level of burnout	42 (11.6%)

questionnaire. For inclusion, mothers had to: (1) have at least one child aged 4 to 10 years; and (2) come from French-speaking countries. Finally, 17.79% ($n = 106$) of protocols could not be analyzed because they were not sufficiently completed, and 21.64% ($n = 129$) of protocols were excluded because they did not fulfill inclusion criteria. Out of the remaining 361 participants, 210 (58.2%) mothers manifested burnout and were enrolled in the current study. The current study meets the ethical guidelines of the Helsinki Declaration. Declaration and the ethical issues of the current research were explored by members of the research group. No personal data that could permit personal identification was recorded. All participants provided informed consent. Approval for the studies was obtained from the National Commission for the Protection of Participants' Personal Data (CNIL).

3. Measures

3.1. Parental burnout

Parental burnout was assessed using the ten-item BMS-10, the short version of the Burnout Measure (Malach-Pines, 2005). It was translated into French by Lourel et al. (2007) and has demonstrated good reliability and validity (Cronbach's $\alpha = 0.86$). This uni-dimensional self-administered questionnaire of 10 items evaluates physical exhaustion, mental exhaustion (complaints about feeling weak and mental fatigue), and emotional exhaustion (lowered sense of self-efficacy in the face of environmental demands) in a seven-point Likert scale (1 'never', 2 'almost never', 3 'rarely', 4 'sometimes', 5 'often', 6 'very often', 7 'always'). For the purposes of this study, the questionnaire instructions, 'When you think about your work overall ...' was replaced by 'When you think about your life as a mother overall ...'. The formulation of the items was not modified. The total score is the item average. A score of 4 points indicates the critical threshold at which an individual is considered to be affected by burnout. Severity, however, can be nuanced. According to Malach-Pines (2005), a score between 3.4 and 4.4 indicates burnout; a score between 4.5 and 5.4 indicates a very serious problem of burnout. A score of 5.5 requires immediate professional help. In this study, Cronbach's alpha was 0.89, suggesting that the items showed relatively high internal consistency.

3.2. Parental stress

Parental stress was assessed using the 36-item French version of "Parental Stress Inventory Short Form" (ISP / SF) and has demonstrated good reliability and validity for parents with children aged up to 12 years (Abidin, 1990; Brigas et al., 1996). It is composed of 3 subscales: "parental distress" measuring distress as a consequence of the parent role: e.g., 'I think I sacrifice most of my life to meet my child's needs, more than I ever thought'; "parent-child dysfunctional interactions" exploring whether the child meets the expectations of the parent: e.g., 'Most of the time, I feel that my child does not love me and he does not want to be close to me'; and "poor child" measuring the degree of distress felt by the parent confronted by child behavior: e.g., 'My child seems to cry or wiggle more often than most children'. Internal consistency of scales for a population of French-speaking mothers was adequate (Cronbach's $\alpha = 0.87, 0.90$ and 0.88 for the three subscales respectively) (Séjourné et al., 2018). Mothers used a 5-point Likert scale to indicate the degree to which they agreed with each statement (1 'strongly agree' to 5 'strongly disagree'); the higher the score the higher the level of parental stress. A score higher than the 85th percentile rank indicates a high level of stress, scores between the 15th and 80th percentile indicates a moderate stress level, and those below the 15th percentile correspond to a low stress level.

3.3. Perceived stress scale

Perceived stress was assessed using ten-item French version of the

Perceived Stress Scale (PSS) (Cohen and Williamson, 1988). PSS examines overwhelming emotions related to the perception of lacking enough resources to cope with stress factors. It has demonstrated good reliability and validity (Cronbach's $\alpha = 0.80$ – 0.85). Bellinghausen et al. (2009); the item responses are on a five-point Likert scale (1 'never' to 5 'very often'): 'In the last month, how often did you feel nervous or stressed?' A score lower than 21 points indicates that the subject "is able to manage his/her stress." Scores between 21 and 26 reveal that the individual "can cope with the stress" and scores greater than 27 indicates that "life is a perpetual threat" for the individual. The Cronbach alpha for the PSS in the current study was 0.85.

3.4. Hospital anxiety and depression scale

Anxious and depressive symptomatology and severity were assessed using the fourteen-item French version of the Hospital Anxiety and Depression Scale (HADS); the item responses are on three-point Likert scale (Razavi et al., 1989; Zigmond and Snaith, 1983). The HADS demonstrates good reliability and validity for anxiety (Cronbach's $\alpha = 0.83$) and for depression (Cronbach's $\alpha = 0.82$) (Razavi et al., 1989). Scores from 0 to 7 indicate an absence of anxious and depressive disorders. Scores between 8 and 10 suggest the presence of anxious or depressive disorders. Scores between 11 and 21 denote the presence of anxious or depressive disorders (Zigmond and Snaith, 1983). Cronbach's alpha for this sample was 0.77 for anxiety and 0.76 for depression.

3.5. Maternal guilt

Maternal guilt related to certain behaviors directed at children was assessed with three items created for the study, inspired by a questionnaire on burnout (Gil-Monte, 2011); for example, 'I have regrets about some of my behavior as a mother'. Responses were indicated on a four-point Likert scale from 1 'never' to 4 'quite frequently' and resulted in a global score. Cronbach's alpha for this sample was 0.78.

3.6. Previous postnatal depression episodes

This variable was explored using the Bromley postnatal depression scale (Stein and Van den Akker, 1992) which permits retrospective auto-evaluation of postnatal depression. Only the first item was presented to allow mothers to indicate if they had experienced postnatal depression as described in the scale.

3.7. Data analyses

Statistical analyses were conducted using STATISTICA 10 (Statsoft Inc.) and SPSS 21. A Little's Missing Completely at Random (MCAR) test was conducted to assess if missing data could be attributed to chance or not (Little, 1988). Descriptive data were expressed as totals and percentages or as means and standard deviations (SD). Cluster analysis was used to identify homogeneous groups of mothers based on variable scores converted to z-scores of depressive, anxious, and guilt symptoms. To increase stability confidence, the emergent clusters were elicited using a two-step process. The number of clusters was not determined in advance. In the first step, a hierarchical cluster analysis was conducted using Ward's method with Euclidian distance measures to determine the number of clusters (Ayache et al., 2016; Hair et al., 2010). The dendrogram and the agglomeration schedule were used to identify the number of clusters; the analysis revealed a model with three clusters. The second step involved a K-means clustering analysis by specifying the most appropriate cluster solution resulting from the first step and assign individuals to one of the identified clusters. The clusters solution was replicated across a random subset of 108 participants, thus enabling an examination of its reliability (Blashfield, 1980). The differences between the classes related to cluster membership variable: psychopathological variables (anxiety and depressive symptoms) and

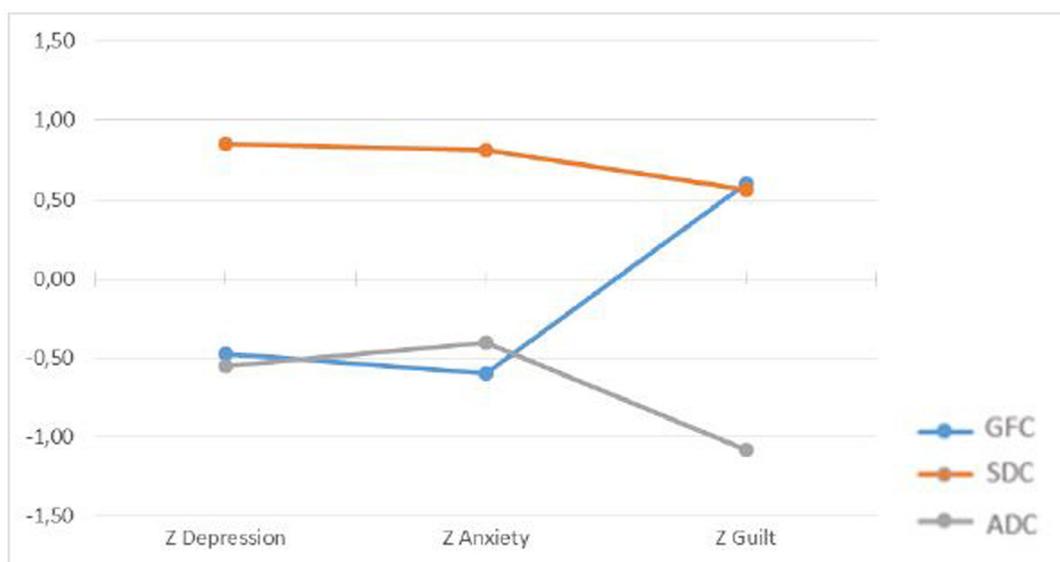


Fig. 1. Cluster solution based on anxiety and depressive symptoms and guilt converted to z scores in a sample of 210 mothers with parental burnout symptoms.

guilt were carried out using ANOVA and Tuckey post-hoc test (significant at $p < .05$). Maternal age, number of children, type of stress (parental distress, dysfunctional parent-child interactions, difficulties in child and perceived stress), maternal burnout and other variables were also considered using Chi-square analysis.

4. Results

The MCAR test indicated that missing data was not due to chance ($\chi^2(407) = 1090.62; p < .00$). Mothers who did not fully complete the protocol present lower parental burnout scores 3.63 (SD = 1.74) and stress scores 52.82 (SD = 45.45) than mothers completed the protocol [burnout: 4.07 (SD = 1.11); $t(778) = 3.53; p < .00$]; stress: 83.92 (SD = 23.85); $t(778) = 10.72; p < .00$].

As for cluster analysis results, a three-cluster solution was identified as optimal (Fig 1). A classification analysis clearly discriminated among the three clusters, Wilks' $\lambda = 0.156, p < .0001$, with 98.10% of the original grouped cases correctly classified. Cluster analysis carried out on the subset data also identified three clusters, which were similar to those in total simple. Fig. 2 suggests an absence of meaningful

differences between the structures of clusters. Furthermore, a three (cluster) by two (sample) MANOVA indicated that the cluster samples interaction was not significant [Pillais $F(5103) = 0.16, p > .05$], confirming that the same clusters were generated by both samples.

The first group (29.52%; $n = 62$) was characterized by low to moderate levels of depression and anxiety accompanied by a strong feelings of guilt; this cluster was named "Guilt feelings cluster" (GFC). The second group (36.19%; $n = 76$) manifested irrefutable anxiety and depressive symptoms along with strong guilt feelings. This second cluster was named "Severe distress cluster" (SDC). The third group (34.29%; $n = 72$) showed low levels of depressive and anxious symptoms and no apparent feelings of guilt. As a result, this cluster was named the "Average distress cluster" (ADC).

Table 2 presents one-way ANOVA results for the 3 clusters. Results showed significant differences for the 3 clusters across all clinical variables. All clusters demonstrated a fairly high level of parental distress (higher than the 85th percentile). Regarding stress present in the relationship with the child and child perceived as difficult, only the SDC showed very high levels of stress (higher than the 85th percentile). The two other clusters showed moderate- to high-levels of stress (scores

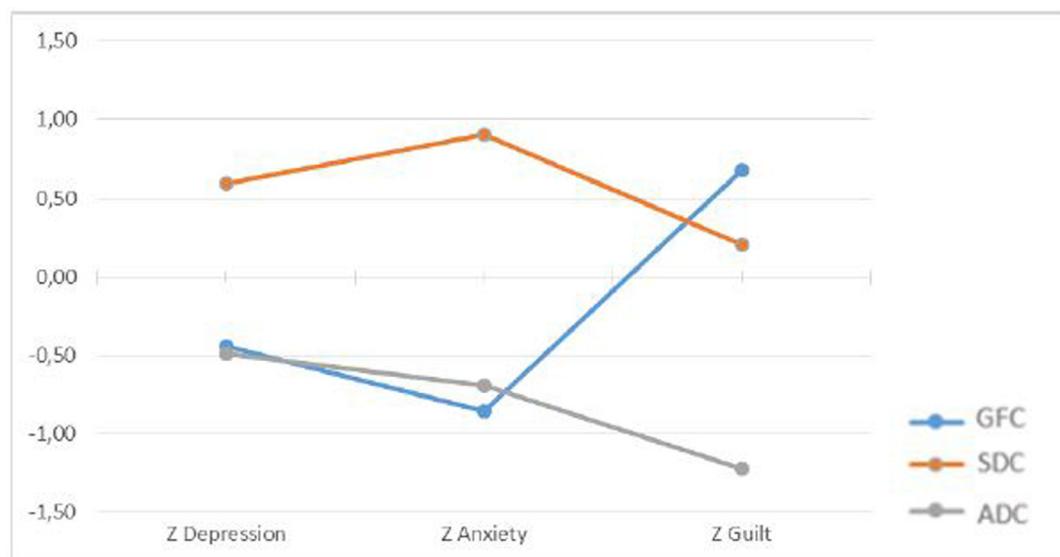


Fig. 2. Cluster solution in a sample of 108 mothers with parental burnout symptoms.

Table 2

Psychopathological profiles according to parental stress, general perceived stress, anxious symptomatology, depressive symptomatology, maternal burnout, guilty, number of children and age in a sample of 210 mothers with parental burnout symptoms.

	GFC <i>n</i> = 62 <i>M</i> (<i>SD</i>)	SDC <i>n</i> = 76 <i>M</i> (<i>SD</i>)	ADC <i>n</i> = 72 <i>M</i> (<i>SD</i>)	<i>f</i>
HADS-Anxiety	8.89 ^a (2.27)	14.47 ^{ac} (2.53)	9.50 ^c (2.98)	98.53 ^{***}
HADS-Depression	6.97 ^a (3.08)	11.14 ^{ac} (2.85)	6.32 ^c (2.62)	62.31 ^{***}
Maternal guilt	9.63 ^b (1.43)	9.30 ^c (1.67)	5.61 ^{bc} (1.13)	171.19 ^{***}
ISP-Parental distress	35.16 ^a (7.60)	42.32 ^{ac} (6.86)	34.26 ^c (7.10)	27.80 ^{**}
ISP-Parent-child dysfunctional interactions	25.60 ^b (7.99)	28.30 ^c (9.48)	21.71 ^{bc} (6.31)	12.45 ^{**}
ISP-Child perceived as difficult	36.66 ^b (9.52)	39.01 ^c (9.64)	30.03 ^{bc} (8.26)	18.89 ^{**}
PSS-Perceived stress	35.69 ^{ab} (5.85)	39.18 ^{ac} (4.34)	31.60 ^{bc} (6.45)	34.18 ^{***}
BMS-Maternal burnout	4.84 ^{ab} (0.58)	5.24 ^{ac} (0.62)	4.50 ^{bc} (0.44)	33.83 ^{***}
Maternal age	33.61 (4.71)	33.87 (5.01)	33.57 (5.48)	0.07

Means with the same superscript are significantly different each other (post-hoc Bonferroni's test, *p* < .05).

GFC guilt feelings cluster, SDC severe distress cluster, ADC average distress cluster * *r* > 0.1, ** *r* > 0.3, *** *r* > 0.5

p < .001

between the 15th and 80th percentile). Specifically, comparing the ADC cluster with the GFC cluster provided results suggesting that the latter showed higher levels of specific stress in terms of the parent-child relationship (parent-child difficulties; PCD), along with a higher level of stress when facing difficult child behavior (child perceived as difficult; CPD). This group appeared to show higher levels of stress in all domains of their lives. For the SDC cluster, they showed the highest levels of overall distress in carrying out their role as parents, and were more stressed in all life domains than those in the GFC cluster. Regarding maternal burnout, the effect size was large between the clusters (descending order: SDC, GFC, ADC). No differences were found with respect to maternal age or number of children.

The resulting cluster profiles were also explored using a Chi-square analysis (Table 3). Socio-demographical and psychological variables were tested. Results have shown that no significant difference was found for socio-demographical variables. The results showed that profile 2 (SDC) had a higher proportion of children with health problems as well as post-partum depression antecedents. For profile 3 (ADC), these participants did not see their role as working mothers impeding good relationships with their children or that the child was perceived as difficult.

5. Discussion

To the best of our knowledge, this is the first study focusing on profiles of depression, anxiety, and guilt in burned out mothers. One important contribution of this study is that not all mothers presenting

Table 3

Socio-demographical and psychological variables according to profiles in a sample of 210 mothers with parental burnout symptoms.

	GFC <i>n</i> = 62		SDC <i>n</i> = 76		ADC <i>n</i> = 72	
	<i>n</i> (yes)	%	<i>n</i> (yes)	%	<i>n</i> (yes)	%
Professional activities	40	29.0%	47	34.1%	51	37.0%
Presence of partner	54	29.2%	70	37.8%	61	33.0%
Financial difficulties	21	22.1%	42	44.2%	32	33.7%
Child with disabilities	1	5.6% ^a	12	66.7% ^{ac}	5	27.8% ^c
Physical fatigue	36	58.1%	50	65.8%	37	51.4%
Work interfering in the relationship with child	21	37.5% ^b	24	42.9% ^c	11	19.6% ^{bc}
Postpartum depression	33	29.7% ^a	48	43.2% ^{ac}	30	27.0% ^c
At least one baby	7	29.2%	9	37.5%	8	33.3%
Perception of the child as difficult	39	34.5% ^b	46	40.7% ^c	28	24.8% ^{bc}

Means with the same superscript are significantly different from each other.

Percentage of mothers answering yes to the item in each cluster.

Significant results *p* < .05 (χ^2).

with burnout present comorbidity with anxious or depressive disorders, as was the case with the GFC and ADC mother profiles. Indeed, Bianchi et al. (2015) suggested that there may be an overlap between depression and burnout, yet these results suggest it is likely that this overlap is present only in some profiles of mothers manifesting burnout; and this for the most severe affected profiles (Van Dam, 2016). This is an important finding because it suggests that parental burnout, depression, and anxiety are distinct disorders (Roskam, et al., 2017). This study also demonstrates the aggravating effect of guilt on burnout (Gil Monte, 2011).

The profiles of mothers with burnout seem to differ according to the severity of the symptoms but not according to sociodemographic variables (Mikolajczak et al., 2017). Thus, a group with severe symptoms on all measures (SDC) group could require psychological treatment given their symptom severity (high levels of stress, anxiety, depression, burnout and guilt) (Van Dam, 2016). These results are in keeping with other studies that showed that parents suffering from parental burnout also often presented with more depressive symptoms (Jaramillo et al., 2016), and higher anxiety (Karadavut et Uneri, 2011). Moreover, the results for this group showed a higher proportion of mothers with post-partum depression antecedents than the other two groups. This study is in keeping with that of Séjourné et al. (2018) that had shown post-partum depression as predictive factor for maternal burnout.

Conversely, the two other groups showed similarly lower scores in depressive and anxious symptoms. These two clusters were distinguished by the level of guilt feelings they recounted. The GFC cluster showed slightly higher maternal burnout scores than the ADC cluster. These results are in keeping with those of Gil Monte (2011) who had showed that profiles of individuals suffering from burnout had higher levels of burnout if guilt feelings were present. Moreover, mothers who feel higher levels of guilt appear to have more difficulty in confronting daily life with their children and feel higher levels of stress in all life domains than the group showing no guilt feelings. Even if these two profiles don't differ significantly in socio-demographical variables, the GFC group considered their children to be more difficult and that their working impeded a good relationship with their children. It therefore seems important provide interventions which discuss and elaborate on guilt feelings (Roskam et al., 2017) and daily difficulties with children as well as the perception of reconciling work and family. In this way, mothers could express these feelings that contribute to high levels of shame for what they perceive as being "bad mothers" (Hubert and Aujoulat, 2018; Kendall-Tackett, 2001).

On another note, all mother profiles reported high levels of perceived stress in the parental role and in areas other than the parental domain. These results are in keeping with Auriol-Bartro (2011), that showed that mothers who sought medical help for stress reported significantly more maternal burnout than those who did not experience general stress. Given these results, it seems that perceived stress in the

parental role or in other areas than the parental one, can be a warning signal to identify potential mothers at risk of exhaustion. In this stage, it can be taken into account the management of family and professional life, daily stressors and coping strategies to relieve the daily lives of mothers and so, prevent burnout (Ferland, 2006).

Overall these results suggest that particular profiles of mothers suffering from burnout present comorbid psychological distress. Mothers with severe burnout showed high comorbidity with depression, anxiety, and clinical stress. On the whole, these results clearly show the need to consider the role of these disorders in understanding burnout in mothers. Furthermore, given different difficulties that mothers can present, the application of tailor-made interventions within diagnostic groups could be promising to focus on patient difficulties and improve therapy effectiveness. Given its efficacy, cognitive behavior therapy (CBT) seems an appropriate treatment for depression, stress, anxiety, and burnout disorders. Many experts consider that a transdiagnostic approach could bring a new perspective in a context of comorbidity (Mansell et al., 2009). In this way, focusing on learned responses, irrational beliefs, or cognitive schemas related to parenthood, professional activity, guilt and perception of the child's temperament may be possible intervention targets used within the CBT framework (Anclair et al., 2017; Stenlund et al., 2009).

Some limitations of the current study should be noted. First, regarding the BMS-10, it originally utilized to assess professional burnout and was subsequently adapted to mothers. While it has been used previously in studies with mothers (Auriol-Bartro, 2011; Séjourné et al., 2018) and a short version of these measures has already been validated on a French sample as well as providing a threshold score (Lourel et al., 2007), it has not been officially validated with the parental population. As a result, it is possible that some false positives as well as false negatives composed the sample analyzed of this study. Furthermore, the BMS-10 measures physical and emotional fatigue. While these variables are essential for defining burnout, it would be pertinent to consider other components associated with maternal burnout (Weiss, 2002). The use of a parental burnout questionnaire with several dimensions and other anchors could allow for observing more subtle differences between groups. Additionally, shared method variance may bias the results of the cluster analysis. Another limitation lies in the Internet sample that may have had an impact on symptom detection. This method, however, has been previously reported as valid as any other type of recruitment method (Lieberman, 2008). It is possible, however, that a selection bias was introduced. Although there was no mention of the real topic of study, the mothers who were members of social network groups that offered support for motherhood, were particularly interested and they participated extensively in the study. While the results of the current study suggest that more than half of the mothers were affected by a certain degree of burnout, only 11.63% of the 361 participating mothers were clearly affected by severe burnout. This prevalence is similar to that observed in other studies (Norberg, 2007; Norberg et al., 2014; Roskam et al., 2017). The current study focused on women's experience of burnout, but that does not suggest that men who are also involved in the care of their children are not affected by it (Roskam et al., 2017; Mikolajczak et al., 2017). Although, our research adds to the understanding of the different subtypes of burned out mothers, longitudinal protocols are required in order to better understand maternal burnout and also to highlight potential predictor factors by groups. Despite these limitations, the results of the current study do suggest innovative directions in differentiating profiles of mothers suffering from burnout based on specific variables. Future research should not only seek to confirm these findings but also focus on tailored preventive actions in order to decrease risk of developing parental burnout.

6. Conclusion

Many experts believe that a transdiagnostic approach to mental

disorders is more promising in order to understand and treat disorders like burnout (Harvey et al., 2004; Mansell et al., 2009). This study adds to the understanding of the different subtypes of burned out mothers according to severity of depression, anxiety, and guilt. More precisely, irrational beliefs linked with difficulties with the child or with the role of the mother and guilt may be future therapeutic targets. Furthermore, it seems important to carry out new research in this area to identify prevention programs specifically adapted to the experience of parents.

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CRedit authorship contribution statement

Raquel Sánchez-Rodríguez: Conceptualization, Data curation, Formal analysis, Writing - review & editing. **Émilie Orsini:** Data curation, Formal analysis, Writing - review & editing. **Elodie Laflaquière:** Data curation, Formal analysis, Writing - review & editing. **Stacey Callahan:** Conceptualization, Formal analysis, Writing - review & editing. **Natalène Séjourné:** Conceptualization, Formal analysis, Writing - review & editing.

Declaration of Competing Interest

The author declares 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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