



Dyadic Effect of Coping on the Perceived Impact of ASD of Children on Parental Quality of Life: Report from the ELENA Cohort

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Abstract

Autism spectrum disorder (ASD) has a significant impact on the quality of life (QoL) of families. This study aimed to examine, for parents of children with ASD, the dyadic effect of each parent's coping strategy on the perception of the impact of ASD on their QoL. In total, 164 couples completed self-report questionnaires, including the Par-DD-QoL, to evaluate the parental perception of QoL. Results from the actor-partner interdependence model showed that, in addition to the effect of the mothers' and fathers' emotion-focused coping on their own perception of QoL, the mothers' emotion-focused coping plays a key role in the fathers' perception of QoL. These findings suggest that both parents of children with ASD would benefit from couple-focused interventions.

Keywords Autism spectrum disorder · Parents · Dyads · Coping · Perception of the impact on quality of life · Actor–partner interdependence model

Introduction

Autism spectrum disorder (ASD) is an early-onset neurodevelopmental disorder in children characterized by a combination of persistent deficits in communication and social interactions across a range of settings and restricted and repetitive behaviors, interests, or activities (American Psychiatric Association, 2013). This long-lasting disorder, with a prognosis that is often more severe than for other

neurodevelopmental disorders, has a major impact on the quality of life (QoL) of the entire family (Cappe et al., 2009). QoL is defined as an “individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns [...] is related to physical health, psychological state, social relationships, and personal beliefs” (Group, 1994). Studies have shown that parents of children with ASD express more psychological distress (Estes et al., 2009; Pisula, 2007) and perceive a greater negative impact on their QoL than those of children with other disabilities or chronic diseases (Bourke-Taylor et al., 2012; Tung et al., 2014).

It has been shown that the impact of ASD on parents' QoL may vary according to not only their child's clinical characteristics (including the severity of ASD, social-adaptive difficulties, and associated psychiatric disorders) (Baghdadli et al., 2014, 2019; Vernhet et al., 2019; Rattaz et al., 2017). (Baghdadli et al., 2014; Eapen & Guan, 2016; Khanna et al., 2011; Pozo et al., 2014; Tung et al., 2014; Vasilopoulou & Nisbet, 2016), but also their own socio-demographic characteristics, including their educational level or professional status (Cappe et al., 2018), as well as transactional processes, such as their stress and coping

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strategies (Benson, 2010; Cappe et al., 2011; Dardas & Ahmad, 2015; Smith et al., 2008; Vernhet et al., 2019).

Coping strategies correspond to the set of “cognitive and behavioral efforts, constantly changing, to manage specific internal and/or external demands that are evaluated as consuming or exceeding one’s resources” (Lazarus & Folkman, 1984). Two dimensions of coping strategies have been proposed (Folkman & Lazarus, 1980): the problem-focused strategy (which consists of acting on the problem causing the distress) and the emotion-focused strategy (which aims to manage the emotional distress associated with the problem). A third strategy is frequently mentioned in the literature in the form of seeking social support (Greenglass, 1993).

A number of studies have found significant links between coping strategies of parents of children with ASD and their QoL (Benson, 2010; Cappe et al., 2011; Dardas & Ahmad, 2015; Smith et al., 2008; Vernhet et al., 2019). The use of problem-focused strategies is generally associated with a better QoL, whereas the use of emotion-focused strategies (notably avoidance-escape) is associated with a poorer QoL.

Furthermore, parents of children with ASD each have to cope with their child’s developmental difficulties, and may have different coping strategies. As soon as the diagnosis is communicated to the parents, they begin a process of readjustment and adaptation that is more or less symmetrical and interdependent (Altiere & von Kluge, 2008; Pisula & Kossakowska, 2010). The parental couple, as a unit, constitutes a dyad within which a privileged network of social interactions is formed, and the characteristics and behaviors of one member of the dyad may affect the life of the other (Kenny & Cook, 1999). The notion of dyadic coping (Bodenmann, 1997) was proposed to recognize the influence of the thoughts, emotions, and actions of the partners in a dyad on each other. Dyadic coping is defined as the efforts of one or both partners to manage stressful events and the tensions experienced by one (individual stress) or both partners (dyadic stress). Dyadic models therefore appear to be relevant for understanding the impact of individual coping strategies used within the parental dyad on the QoL of each member.

Several studies on the dyadic effects of coping strategies have focused on patient-caregiver dyads in the context of chronic illness. For example, research conducted with couples in which one partner is chronically ill has shown that the coping strategies used by one partner have an impact not only on him or herself, but also on the other partner (Lafaye et al., 2014). It has been shown that the nature of the coping strategy used by ill people can have a direct impact on the QoL of their caregivers in various contexts, such as cancer (Baumstarck et al., 2016; Hamidou et al., 2018) or serious mental illness (Boyer et al., 2017). These studies have shown that in couples in which one member is ill, the use of strategies, such as positive thinking or problem solving, are likely

associated with a better QoL, whereas those based on avoidance or the search for social support are likely a risk factor for a poorer QoL (Baumstarck et al., 2016, 2018; Boyer et al., 2017; Hamidou et al., 2018). However, the results are contradictory concerning the direction of the influence of the use of social support on QoL.

The dyadic effects of coping have also been studied in the dyads of parents confronted with their child’s serious illness. For example, research has been carried out on parents confronted with a diagnosis of cancer in their child (Compas et al., 2015; Van Schoors et al., 2019a, b). Compas et al. (2015) showed that disengagement coping strategies (including avoidance, denial, and wishful thinking) by the mothers of children with cancer were associated with greater depressive symptoms in the fathers after controlling for the fathers’ coping strategies and sociodemographic variables. In their study, Van Schoors et al. (Van Schoors, et al., 2019a) found that the type of dyadic coping strategy was predictive of better perceived family adjustment by parents over time (in terms of financial, social, or overall family impact and satisfaction with internal family adjustment). Specifically, better communication concerning their stress predicted a smaller financial impact on these families. In other words, the more mothers or fathers shared their stress with their partner in the short term, the less they worried about the long-term financial consequences of the disease. In addition, an association was found between hostile negative dyadic coping (such as denigration, distancing, sarcasm, and minimization) and satisfaction with family adjustment. Thus, the more distance, mockery, or sarcasm a parent felt from their partner when talking about the illness, the lower was the perceived family adjustment. In another study, Van Schoors et al. (2019a, b) showed that positive dyadic coping (i.e., supportive dyadic coping, in which one partner supports the other in his/her coping efforts) and common dyadic coping (i.e., both partners participate in the coping process together) were associated with lower levels of perceived depression, anxiety, and stress and a more satisfying perceived marital relationship. On the contrary, negative dyadic coping, including hostile (i.e., support accompanied by distancing or sarcasm), ambivalent (i.e., support that is unwilling), or superficial (i.e., support that is insincere) dyadic coping (Bodenmann, 1997), were associated with more depression and a less satisfying marital relationship.

As the literature on chronic illnesses emphasizes the existence of dynamic interactions within a dyad that can modify QoL, it is important to explore these interactions between parents whose child has a chronic disorder, such as ASD, to gain a systemic understanding of their adaptations and support needs.

A study by García-López et al. (2016) showed an association between supportive dyadic coping of mothers and fathers and marital satisfaction for parents of children with

ASD, as well as psychological adjustment (i.e., their level of parental stress and psychological well-being) for each partner. The authors used an actor-partner interdependence model (APIM) that approaches the dyad, the couple of mother and father, as the unit of analysis (Cook & Kenny, 2016). This method allows for the study of interactions between dyad members (Cook & Kenny, 2016; Kenny, 2016).

Studies that have examined the dyadic effects of coping strategies of parents of children with ASD remain scarce and none have examined the effects of these strategies on their QoL. QoL of parents of children with ASD is impacted by the child's disorder (Vasilopoulou & Nisbet, 2016) and the link between coping strategies and QoL in this population has been demonstrated (Vernhet et al., 2019). We hypothesized that coping strategies are interdependent on the perception of the impact of ASD on the QoL within the “mother–father” dyads.

Our objective was to study the dyadic effect of each parent's coping strategy (problem-focused coping, emotion-focused coping, and social-support seeking) on the perception of the impact of ASD on the emotional and daily disturbance of QoL of both parents in a sample of 164 “mother–father” dyads whose child has formally diagnosed ASD.

Methods

Participants

This cross-sectional study used data from the prospective, multicenter French cohort—ELENA—of children and adolescents with a confirmed diagnosis of ASD (Baghdadli et al., 2019). Almost 900 children were recruited into the ELENA cohort after parental consent by December 31, 2019. Inclusion criteria for the ELENA cohort were to be aged 2–16 years and diagnosed with ASD according to DSM-5 criteria. Children were diagnosed by a multidisciplinary team according to a standardized process, including the Autism Diagnostic Interview-Revised (ADI-R), the Autism Diagnostic Observation Schedule 2 (ADOS-2), the Vineland Adaptive Behavior Scale-II (VABS II), and psychometric tests to assess IQ (Wechsler, K-ABC II, PEP, or Brunet Lézine scales, depending on the child's level). There were no exclusion criteria for the ELENA cohort other than parental refusal. As part of the follow-up [i.e., at baseline (V0), 18 months after V0, 3 years, 4.5 years, and 6 years after V0], parents were asked to complete online self-questionnaires to collect information on multiple variables, including socio-demographic and psychosocial variables, as well as data concerning the child's care and behavior in a standardized manner.

In this article, we used a subset of participants from the ELENA cohort corresponding to 164 couples of parents of children with ASD (164 mothers and 164 fathers) at the time of inclusion (V0). To be included in our study, parents had to live in the same household to avoid parental bias in responses related to lifestyle differences (e.g., the perception of QoL may be affected in single-parent families or when parents live apart) and because the study focused on the dyadic effects of coping on perception of QoL. Parents were also required to have completed the Par-DD-QoL and WCC-R by the time of data extraction (January 2021).

Measures

Par-DD-QoL at the end of (Parental-Developmental Disorder-Quality of Life)

A self-administered questionnaire that explores the parental perception of the impact of ASD on the emotional and daily disturbance of QoL (Baghdadli et al., 2014). This instrument was tailored from the Parental Ear, Nose, and Throat-Quality of Life (Par-ENT-QoL), a validated French questionnaire used to study the QoL of the parents of children from the general population with chronic ear, nose, and throat (ENT) infections (Berdeux et al., 1998). This scale was adapted to study the QoL of the parents of children with neurodevelopmental conditions, such as ASD (Baghdadli et al., 2014; Rattaz et al., 2017; Raysse, 2011). Each of the 17 items is rated on a five-point Likert scale and a global score can be calculated from two sub-scores: (i) emotional score (stress, anxiety, sleeping disorders, etc.); and (ii) daily life scores (family life, personal life, social life, professional life, etc.). The reliability of the Parent-Developmental Disorders-Quality of Life for each item was excellent ($\alpha > 0.82$) and the intra-class coefficient of the test/re-test 0.93 (Baghdadli et al., 2014; Raysse, 2011). The scores were linearly transformed to range from 0 to 100, 0 being the lowest impact on QoL and 100 the highest, assuming equal weights for each dimension.

WCC-R (Ways of Coping Checklist)

This scale, inspired by Lazarus and Folkman's transactional model of stress created by Vitaliano et al. (1985), was translated and validated in French by Cousson et al. (1996). It is a self-questionnaire composed of 27 items to which the subjects answer using a four-point Likert scale. The scores obtained from the responses to the items are analyzed through three dimensions: a score that evaluates the coping focused on the problem, one that measures emotion-focused

coping, and one that assesses social-support seeking. This scale has good psychometric qualities. A factorial analysis conducted on the responses of 468 French adults made it possible to isolate the three domains explaining approximately 35% of the total variance. The internal consistency coefficients are very satisfactory (0.71 to 0.82) and the test–retest reliability coefficients at one-week intervals are highly adequate (+0.90, +0.84, and +0.75, respectively).

Demographic and Clinical Characteristics

The parents' age, education levels and socioeconomic status (SES) were extracted from the ELENA socio-demographic report à inclusion visit. Parental SES was scored as high (business owners, executives), middle (farmers, supervisors, skilled craftsmen), or low (farm workers, laborers, service employees, unemployed).

Children clinical characteristics were collected from the ELENA inclusion visit. Symptoms severity was measured using the Calibrated Severity Score (CSS) of Autism Diagnosis Observation Schedule-2 (ADOS-2) (Lord et al., 2012). The intellectual level was estimated for each child using age-appropriate tests to take into account the variability of skills among children by age (Howlin et al., 2014). A performance IQ was calculated if a standardized test could be administered [Wechsler scales (Wechsler, 2002, 2003, 2014a, b) or K-ABC II (Kaufman & Kaufman, 2004)]. A developmental age was estimated from developmental scales if the child could not understand the test instructions [Brunet Lézine-Revised (Brunet et al., 1997) or PEP-3 (Schopler et al., 2004)] and a developmental quotient was calculated according to Stern's formula (Stern, 1912) by dividing the developmental age score by the chronological age $\times 100$. The adaptive skills were assessed with the Vineland Adaptive Behavior Scale, Second Edition (VABS-II) (Sparrow et al., 2005).

Statistical Analysis

Descriptive analyses (such as means, standard deviations, frequencies, and percentages) were computed to describe the demographic and clinical characteristics of the mothers and fathers and to describe the clinical characteristics of their child. Paired comparisons using paired T-tests, Mc Nemar's test, or Stuart Maxwell's test, as appropriate, were performed to determine, first, the difference in characteristics between the mothers and fathers and second, the differences in coping strategies (problem-focused coping, emotion-focused coping, and seeking social support) and the perception of the impact of ASD on parental QoL between the mothers and fathers. Pearson's correlations were calculated to test the non-independence of these continuous variables among the mothers and fathers.

We used the APIM to assess the dyadic effects of the three coping strategies on the perception of the impact of

ASD on parental QoL. The outcome variable was the perception of the impact of ASD on parental QoL. The predictor variables are the three coping dimensions: problem-focused coping, emotion-focused coping and social-support seeking. This model assumes that the scores within the same dyad are not independent but more similar than the scores of two individuals who are not in the same dyad. First, the distinguishability of the dyad (mother and father) was confirmed using a likelihood-ratio test between models with and without distinguishable members. Then the APIM was assessed using structural equation modeling (SEM) with a maximum likelihood estimation, which is recommended for distinguishable dyads. A separate APIM was fitted for each combination of dyadic coping subscales and the perception of the impact of ASD on parental QoL. No missing data for coping strategies or parental perception of QoL variables was reported. For this study, the actor effect was the impact of a person's coping strategy on his or her own perception of QoL. The partner effect was the impact of each person's coping strategy on his or her partner's perception of QoL. The k ratio was calculated to assess the magnitude of the partner effect to the actor effect. The 95% confidence intervals of k were calculated using Monte Carlo sampling. A k ratio of 1 (couple model) implies that both the actor and partner have a relatively equal pattern from the coping strategies to their perception of QoL, whereas a k ratio of -1 implies that the actor and partner have opposite patterns. A k ratio of 0 (actor or partner only model) implies that the independent variable affects only the actor's or the partner's outcome.

Unstandardized coefficients for actor and partner effects are presented with their standard error (SE). All p values < 0.05 were considered statistically significant. Statistical analyses were performed using SAS enterprise guide v7.13 and R software v3.6.3. The APIMs were generated using the lavaan-R package for fitting the SEM.

Results

In total, 164 dyads (mothers/fathers) were studied. The characteristics of the parents and children are presented in Table 1.

The fathers were significantly older [40.8 years ($SD \pm 7.7$)] than the mothers [37.7 years ($SD \pm 6.1$)], $p < 0.001$, had a higher socioeconomic level than the mothers (34.8% of fathers with a high SES versus 16.5% of mothers, $p = 0.004$), but a comparable level of education to that of the mothers ($p = 0.29$).

In approximately 80% of cases, the child with ASD was a boy and the mean age of the children with ASD was 5.8 years ($SD \pm 3.4$). In our sample, the ASD severity index estimated with the ADOS was moderate ($M = 7.0$, $SD \pm 1.9$).

Table 1 Demographic characteristics of mothers, fathers (n = 164 dyads), and their children with ASD

Demographic variable		Mothers (n = 164)	Fathers (n = 164)	p value
<i>Parents</i>				
Age, mean (SD)		37.67 (6.10) ^a	40.75 (7.71)	<0.001
Educational level, n (%)	Elementary education	0 (0) ^e	1 (0.62) ^b	0.29
	Secondary education (high school)	55 (34.59)	64 (39.51)	
	Higher level (college/graduate school)	104 (65.41)	97 (59.88)	
Socio-professional category, n (%)	Low SES	85 (53.80)	71 (44.10)	0.004
	Middle SES	47 (29.75)	34 (21.12)	
	High SES	26 (16.46) ^f	56 (34.78) ^c	
<i>Child</i>				
Gender, n (%)	Boys	129 (78.66)		
	Girls	35 (21.34)		
Age, mean (SD)		5.80 (3.39)		
Autism severity—CSS (ADOS-2), mean (SD)		7.02 (1.94) ^h		
Cognitive level (Best Estimate IQ), mean (SD)		73.19 (28.20) ^g		
Adaptative behaviors (Vineland-II), mean (SD)	Communication SS	71.66 (15.04)		
	Daily living skills SS	73.82 (12.13)		
	Socialization SS	70.54 (10.86)		
Number of siblings, n (%)	1	36 (21.95)		
	2	83 (50.61)		
	≥3	45 (27.44)		

^a1 missing data^b2 missing data^c3 missing data^d4 missing data^e5 missing data^f6 missing data^g19 missing data^h23 missing data**Table 2** Comparison of Par-DD-QoL scores and WCC-R scores by fathers and mothers

	Fathers Mean (SD)	Mothers Mean (SD)	Score difference ^a	p value
Par-DD-QoL score	50.30 (16.04)	56.21 (16.80)	− 5.91 (15.17)	<0.001 ^b
WCC-R: problem-focused coping	29.43 (5.42)	30.96 (5.30)	− 1.54 (5.66)	0.001 ^b
WCC-R: emotion-focused coping	21.80 (5.62)	22.95 (5.58)	− 1.14 (6.34)	0.017 ^b
WCC-R: seeking social support	19.73 (5.62)	21.96 (5.76)	− 2.23 (5.84)	<0.001 ^b

^aFathers' score−mothers' score^bPaired student test

Matched Comparison of the Perception of the Impact of ASD on QoL and Coping Scores Between Fathers and Mothers

The comparison between each parent's perception of the impact of ASD on their QoL and the coping strategies they implemented is presented in Table 2. The results suggest

that the mothers perceived a greater negative impact of ASD on their QoL than the fathers ($p \leq 0.001$). In addition, the mothers appeared to implement more coping strategies than the fathers for all three coping categories: problem-focused coping ($p = 0.001$), emotion-focused coping ($p = 0.017$), and seeking social support ($p < 0.001$).

Table 3 Correlation between the Par-DD-QoL scores and WCC-R scores of mothers and fathers

	1	2	3	4	5	6	7	8
1. Fathers' par-DD-QoL score	–							
2. Mothers' par-DD-QoL score	0.574**	–						
3. Fathers' problem-focused coping	– 0.093	– 0.052	–					
4. Mothers' problem-focused coping	– 0.027	– 0.101	0.444**	–				
5. Fathers' emotion-focused coping	0.434**	0.131	– 0.054	0.115	–			
6. Mothers' emotion-focused coping	0.340**	0.469**	– 0.069	– 0.091	0.360**	–		
7. Fathers' seeking social support	0.033	0.003	0.496**	0.239**	0.268**	0.054	–	
8. Mothers' seeking social support	0.07	0.059	0.237**	0.399**	0.170*	0.15	0.475**	–

*p<0.05, **p<0.01

Correlations

Correlations between the perception of the impact of ASD on the fathers' and mothers' QoL and coping are presented in Table 3. The mothers' perception of the impact of ASD on their QoL was significantly related to their own emotion-focused coping ($r=0.444$, $p<0.01$). The fathers' perception of the impact of ASD on their QoL was also significantly related to their own emotion-focused coping ($r=0.434$, $p<0.01$), as well as to the mother's emotion-focused coping ($r=0.340$, $p<0.01$). Finally, the perceptions of the impact of ASD on the fathers' and mothers' QoL significantly correlated with each other ($r=0.574$, $p<0.01$).

Impact of Coping Strategies on Parental Perception of QoL

Three APIM analyses were carried out to test the impact of coping strategies (problem-focused coping, emotion-focused coping, and seeking social support) on the perception of the impact of ASD on QoL for the mothers and fathers.

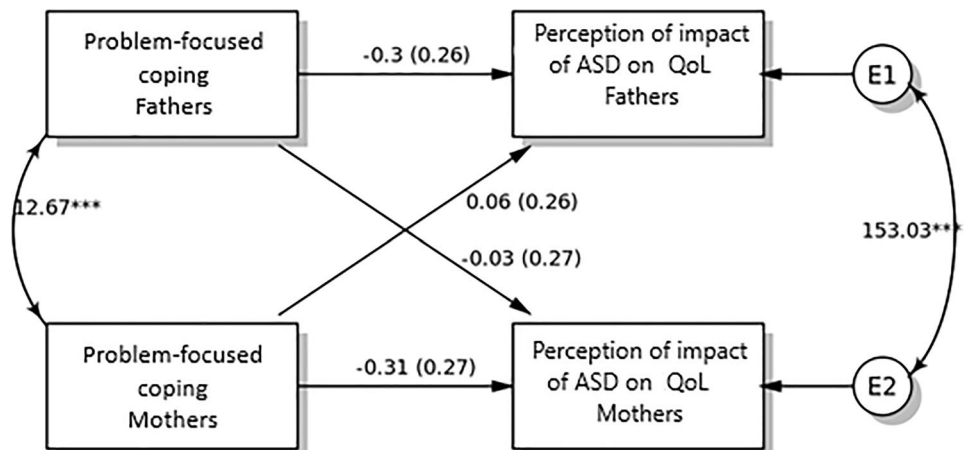
Impact of Problem-Focused Coping on the Perception of the Impact of ASD on QoL

The first APIM model examined actor and partner effects of problem-focused coping on the perception of the impact of ASD on QoL (Fig. 1). For both the mothers and fathers, problem-focused coping was not significantly associated with the perception of the impact of ASD on their QoL (for mothers, $\beta=0.308$, $SE=0.275$, $p=0.262$; for fathers, $\beta=-0.301$, $SE=0.257$, $p=0.242$). Similarly, both partner effects were found to be non-significant when predicting the perception of the impact on QoL from problem-focused coping among the mothers ($\beta=-0.03$, $SE=0.269$, $p=0.921$) and fathers ($\beta=0.056$, $SE=0.257$, $p=0.831$) (Table 4).

Impact of Emotion-Focused Coping on the Perception of the Impact of ASD on QoL

The results of the APIM for the impact of emotion-focused coping on the perception of the impact of ASD on QoL are presented in Fig. 2. For both the mothers and fathers, emotion-focused coping was significantly associated with

Fig. 1 Problem-focused coping: the actor and partner effects as predictors of the perceived impact of ASD on QoL. APIM with distinguishable dyads regression model. ***p<0.001



the perception of the impact of ASD on their own QoL (for mothers, $\beta = 1.46$, $SE = 0.22$, $p < 0.001$; for fathers, $\beta = 1.02$, $SE = 0.21$, $p < 0.001$). Only the partner effect was found to

be significant when predicting the perception of the impact of ASD on QoL from emotion-focused coping among the fathers ($\beta = 0.61$, $SE = 0.21$, $p < 0.01$). The mothers’

Table 4 APIM parameter estimates for the impact of problem-focused coping, emotion-focused coping, and social-support seeking on the perceived impact of ASD on QoL

	Impact of problem-focused coping on the perceived impact of ASD on QoL			Impact of emotion-focused coping on the perceived impact of ASD on QoL			Impact seeking social support on the perceived impact of ASD on QoL		
	β	SE	p value	β	SE	p value	β	SE	p value
Actor effect									
Mothers	-0.308	0.275	0.262	1.457	0.222	<0.001	0.216	0.258	0.404
Fathers	-0.301	0.257	0.242	1.022	0.210	<0.001	-0.002	0.253	0.994
Partner effect									
Mothers	-0.027	0.269	0.921	-0.128	0.221	0.561	-0.097	0.265	0.715
Fathers	0.056	0.262	0.831	0.607	0.211	0.004	0.195	0.246	0.429

The statistically significant actor effects are indicated in bold
 β unstandardized coefficients, SE standard error

Fig. 2 Emotion-focused coping: the actor and partner effects as predictors of the perceived impact of ASD on QoL. APIM with distinguishable dyads regression model. ** $p < 0.01$, *** $p < 0.001$

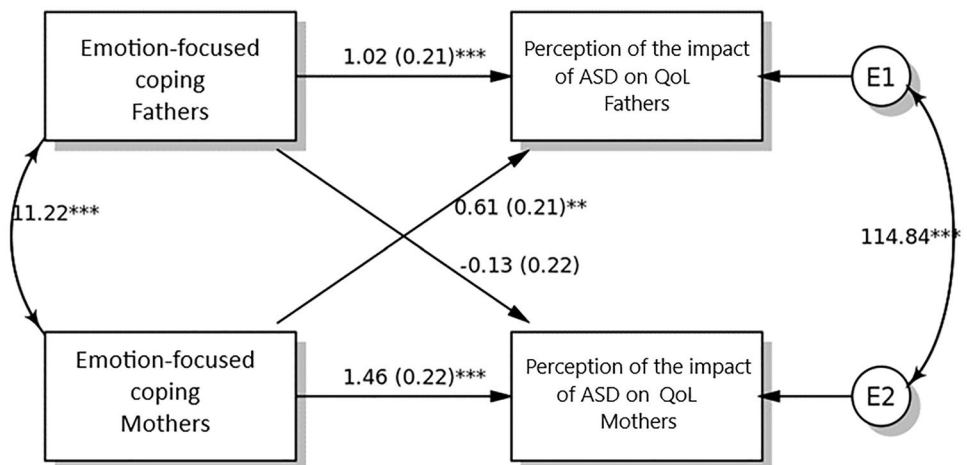
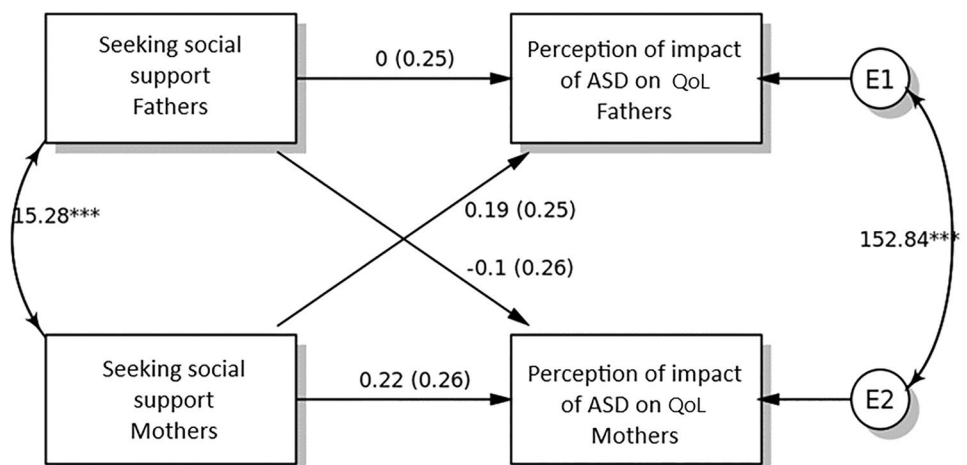


Fig. 3 Seeking social support: the actor and partner effects as predictors of the perceived impact of ASD on QoL. APIM with distinguishable dyads regression model. *** $p < 0.001$



perception of the impact of ASD on QoL was not affected by the fathers' emotion-focused coping ($\beta = -0.13$, $SE = 0.221$, $p = 0.561$) (Table 4).

Concerning the dyadic patterns, the value of the k ratio for the mothers was -0.09 [95% CI ($-0.38, 0.2$)] and 0.59 [95% CI ($0.05, 1.13$)] for the fathers. Thus, the actor-only model is plausible for mothers, whereas the couple model is plausible for fathers.

Impact of Seeking Social Support on the Perception of the Impact of ASD on QoL

The final APIM examined actor and partner effects of seeking social support on the perception of the impact of ASD on QoL among the mothers and fathers (Fig. 3). For both the mothers and fathers, actor effects and partner effects were found to be non-significant when predicting the perception of the impact of ASD on QoL from seeking social support (Table 4).

Discussion

The results of the present study highlight some important observations concerning the dyadic effect of each parent's coping strategy on the perception of the impact of ASD on the QoL of both parents in a sample of 164 "mother-father" dyads.

First, our results indicate that the mothers perceive a greater impact than the fathers of their child's ASD on their QoL. This result is consistent with those of most previous studies (Mugno et al., 2007; Vasilopoulou & Nisbet, 2016; Yamada et al., 2012), although a few found there to be no difference in the QoL between the two parents (Dardas & Ahmad, 2014; Hastings, 2003). This result, however, needs to be interpreted in light of the fact that there are already gender differences in parents' ratings of QoL, whether or not they have a child with ASD, with mothers generally reporting a lower QoL than fathers (Chen et al., 2018; Lee et al., 2015). A possible explanation could be that mothers generally have a greater responsibility for the education of their children (Gray, 2003; Wang et al., 2011). Indeed, this appears to be the case in our study, in which the mothers were the most likely to have stopped working compared to fathers.

Second, we observed that the mothers implemented more coping strategies than the fathers, whether it was emotion-focused coping, problem-focused coping, or social-support seeking. Lee (2009) reported a similar result in their study, namely that the mothers of children with ASD used more coping strategies than the fathers to deal with stress. However, there is no consensus concerning these results, as several studies showed differences between mothers and fathers

in the use of coping strategies (Dabrowska & Pisula, 2010; Hastings et al., 2005; Luque Salas et al., 2017; Pozo et al., 2014), whereas others did not (Allik et al., 2006). Moreover, within the studies that observed a gender difference in the use of coping strategies, the results were contradictory. Thus, a systematic review (Vernhet et al., 2019) found that mothers used more emotion-focused coping (Dabrowska & Pisula, 2010; Luque Salas et al., 2017) and social-support seeking (Luque Salas et al., 2017) than fathers and that fathers used more problem-avoidance strategies than mothers (Luque Salas et al., 2017; Pozo et al., 2014). However, other studies have shown that mothers use problem-focused coping strategies more than fathers (Lee, 2009; Pozo et al., 2014). The lack of consensus on this issue may be explained by methodological biases, such as the timing of data collection. In the context of our study, our results can be explained by the fact that our data were collected at the time of inclusion of the children in the ELENA cohort, which coincides with the time of the communication of the diagnosis of ASD to their parents. We can therefore hypothesize that the fathers had not yet developed strategies to cope with their child's ASD at the time of diagnosis and that, conversely, the mothers had developed this type of strategy earlier, in a context in which they are the primary day-to-day providers of educational care to their children and are confronted with the chronic stress that this represents (Gray, 2003; Wang et al., 2011). Thus, it is possible that the fathers would mobilize more problem-focused coping strategies than the mothers at a distance from the diagnosis. It would be interesting to evaluate it in future studies using data collected at V2 (i.e., 3 years after inclusion) or V4 (i.e., 6 years after inclusion).

Third, the examination of the associations between emotion-focused coping and parental perception of the impact of ASD on QoL allowed us to identify "actor effects" (i.e., the association between the emotion-focused coping of a member of the dyad and his or her own perceived QoL). We observed that the more the mother used emotion-focused coping, the greater was the perceived impact of ASD on her QoL with the PAR-DD-QOL. We observed the same result for fathers, who perceived a greater impact of ASD on their QoL the more they used emotion-focused coping strategies. However, it is important to note that the items exploring "emotion-focused coping" in the questionnaire used in our study (Cousson et al., 1996; Vitaliano et al., 1985) were mainly related to avoidance strategies (e.g., "I tried to forget everything", "I thought of unreal or fantastic things to make me feel better") or self-blame (e.g., "I criticized or lectured myself", "I made myself feel guilty"). It has been suggested that these types of strategies are inappropriate and ineffective for coping with a stressful event for family caregivers of people with dementia (Li et al., 2012). This result corroborates other similar results in the literature, whether in "patient-caregiver" dyads (Baumstarck et al., 2018; Boyer

et al., 2017; Hamidou et al., 2018; Lafaye et al., 2014; Lazarotto et al., 2019) or parents of children with ASD (Cappe et al., 2011), namely, a lower QoL when emotion-focused coping and, in particular, avoidance strategies are used.

Further concerning emotion-focused coping strategies, we observed a “partner effect” (i.e., the association between the emotion-focused coping of one member of the dyad and the perceived QoL of the other member). Thus, the more emotion-focused coping mothers used, the greater was the impact of the child's ASD on the fathers' perceived QoL. This result appears to be consistent with those of other studies reporting a partner effect in the literature. Indeed, in a study (Lafaye et al., 2014) describing partner effects in a context in which one of the partners has prostate cancer, it has been shown that the quality of the mental life (evaluated using the Short Form 12 (SF-12) scale and grouping together dimensions, such as vitality, social functioning, emotional state, and psychological health (Gandek et al., 1998)) of men was lower when their wives used emotion-focused coping. However, in our study, this partner effect was not observed, i.e., the fathers' use of emotion-focused coping was not significantly associated with the mothers' perceived impact of ASD on QoL.

Fourth, the examination of the associations between problem-focused coping and the perception of the impact of ASD on QoL for both the fathers and mothers did not identify either an actor or partner effect. This result was unexpected, given that this is hypothesized to be one of the most effective coping strategies for dealing with a stressor in parents of children with a neurodevelopmental disorder (Cappe et al., 2011; Dabrowska & Pisula, 2010; Smith et al., 2008). Our results can be explained by the fact that our data were collected at V0, i.e., at the time of diagnosis. It is indeed possible that parents have not yet developed these strategies to cope with their child's ASD, and that they develop them in the months following the communication of the diagnosis. It should be emphasized that, to be effective, problem-focused strategies must be adapted to the difficulties encountered. Communication of the diagnosis thus often allows the adaptation of care and support to the needs of children with ASD and their families. It is therefore likely that the effectiveness of problem-focused coping on the perception of parental QoL is only visible in the long term and that the impact of this type of coping strategy on the perception of the QoL of the parents in our sample cannot be observed at V0.

Finally, contrary to our expectations, the study of associations between coping strategies such as “social-support seeking” and parental perception of the impact of ASD on QoL, did not allow us to find any actor or partner effects. It is possible that the absence of significant results in our study is linked to the questionnaire used: the WCC-R. Indeed, the WCC-R is not specific to the evaluation of the perception of seeking social support. Studies that have shown a link

between social-support seeking and QoL (Baumstarck et al., 2016, 2018; Boyer et al., 2017; Hamidou et al., 2018; Lazarotto et al., 2019) all used other tools (COPE Brief, Baumstarck et al., 2017; Muller & Spitz, 2003)).

One of the strengths of our study was the use of the APIM model to model interdependence in the dyadic relationship, insofar as a child's ASD diagnosis can be considered a dyadic stressor (Bodenmann, 1997) for his/her parents. However, as the APIM model is generally used in longitudinal designs (Cook & Kenny, 2016), it would be relevant in the future to use such a design. Another strength of our study, given its exploratory nature, was the sample size of children who all had a confirmed diagnosis of ASD. However, further research with larger sample sizes is needed to confirm our findings.

Despite the strengths of our study, our results must be considered in light of a number of limitations. First, the cross-sectional design of our study did not allow us to establish a causal link between coping strategies and parents' perceptions of the impact of ASD on their QoL. Thus, we do not know whether an individual's coping strategies actually influence his or her perception and that of his or her partner over time. Future studies should use a prospective longitudinal design to better test the direction of associations between the coping strategies implemented and parents' perceptions of the impact of ASD on their QoL. Another limitation of our study may have been a selection bias related to the fact that the individuals who volunteered to participate in the study had particular characteristics, as studies conducted in the general population generally involve those who are in better health. This may lead to a biased estimate of the perceived impact of ASD on the QoL by the parents of children with ASD and thus underestimate the dyadic effect of coping. In addition, our study sample likely included parents who had the motivation and time to participate in the study, which limits the generalizability of our results. Furthermore, the lack of the possibility to adjust for potential confounding factors, such as PSI and HAD scores or marital status, limits the interpretation of our results. In addition, we explored individual coping strategies to predict the perception of the partner of the impact of ASD on their QoL in parenting dyads, but did not directly explore the influence of dyadic coping (i.e., how both partners respond to a specific stressful event to reduce distress) (Revenson et al., 2005) on perceived QoL. It would be informative to use specific scales, such as the Dyadic Coping Inventory (Bodenmann et al., 2018), in future studies. Moreover, although the QoL of mothers appeared to be more affected by ASD than that of fathers in the ELENA cohort, we cannot conclude that there is a specific effect of ASD from the results of our study in the absence of a control group of parents of children with typical development. Finally, the use of self-administered questionnaires reduces the reliability of the measures and may also induce a desirability bias.

Conclusion and Clinical Implications

Our finding that mothers perceive a greater negative impact of ASD on their QoL than fathers confirms that it is essential to consider the possibility that mothers and fathers of children with ASD have specific needs in terms of their QoL. This study shows that parents' perception of the impact of ASD on their QoL is not only related to their own coping strategies but also those used by their partner.

In addition, these results emphasize the need for parent education programs, which contribute to parent empowerment and might contribute to the improvement of QoL. It may be important for clinicians to take into consideration inter-individual differences in the way fathers and mothers react and cope with their child's ASD when accompanying parents following the diagnosis. Parents of children with ASD should receive couple-focused interventions to develop or strengthen their ability to cope together with their child's disorder and thus improve their perceived QoL.

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