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Title: The Role of Attachment in Parents' Perception of the Impact of Pediatric Cancer on Their Relationship




Titre : Le rôle de l'attachement dans l'impact perçu du cancer pédiatrique sur la relation conjugale des parents

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Abstract

Introduction: The cancer diagnosis of a child is an extremely challenging event that necessitates adjustments for parents at individual, family, and couple levels. To our knowledge, the factors that may explain parents' relationship adjustments in the context of pediatric cancer remain under-documented.

Objectives: This dyadic study (1) described the perceived impact of pediatric cancer on parents' relationship and (2) explored the relationship between attachment insecurities (both anxiety and avoidance) in both parents and their perception of how pediatric cancer influenced different facets of their relationship.

Method: Fifty-one mixed-sex couples whose child has received treatment for cancer (whether the treatment was ongoing or completed) within the past two years, completed online questionnaires.

Results: Path analyses, based on the *Actor-Partner Interdependence Model*, showed that higher attachment insecurities in mothers and fathers were associated with their own perception of a more negative impact of cancer on their relationship regarding the quality of partner support (actor effect). Surprisingly, higher attachment insecurities in mothers and fathers were also linked to their partner's perception of a more positive impact of their child's illness on their relationship functioning (partner effects).

Discussion and conclusion: These results suggest that attachment insecurities not always have solely negative impacts. In extreme situations, such as pediatric cancer (at least in the early years of post-diagnosis), attachment-related anxiety and avoidance of parents could protect the relationship from certain difficulties.

Keywords: attachment insecurities, relationship functioning, parents, pediatric cancer, actor-partner interdependence model

Résumé

Introduction : Le diagnostic de cancer d'un enfant est un événement extrêmement difficile qui nécessite des ajustements chez les parents au niveau individuel, familial et conjugal. À notre connaissance, les facteurs associés à l'ajustement conjugal dans ce contexte demeurent sous-documentés.

Objectifs : Cette étude dyadique (1) a décrit l'impact perçu du cancer pédiatrique sur la relation des parents et (2) a exploré la relation entre les insécurités d'attachement (anxiété et évitement) chez les deux parents et leur perception de l'influence du cancer pédiatrique sur les différentes facettes de leur relation.

Méthode : Cinquante et un couples hétérosexuels dont l'enfant a été traité pour un cancer (que le traitement soit en cours ou terminé) au cours des deux dernières années ont répondu à des questionnaires en ligne.

Résultats : Les analyses acheminatoires basées sur le modèle d'interdépendance acteur-partenaire ont indiqué qu'un niveau plus élevé d'insécurités d'attachement chez les mères et les pères était associé à leur propre perception d'un impact plus négatif du cancer sur leur relation en ce qui concerne la qualité du soutien du partenaire (effet acteur). Étonnamment, un niveau plus élevé d'insécurités d'attachement chez les mères et les pères était également lié à la perception de leur partenaire d'un impact plus positif de la maladie de leur enfant sur le fonctionnement de leur relation (effets partenaires).

Discussion et conclusion : Ces résultats suggèrent que les insécurités d'attachement n'ont pas uniquement des effets négatifs. Ainsi, nous proposons que dans des situations extrêmes, comme le cancer pédiatrique (au moins dans les premières années suivant le diagnostic), l'anxiété et l'évitement liés à l'attachement chez les parents pourraient protéger la relation de certaines difficultés.

Mots-clés : insécurités d'attachement, fonctionnement conjugal, parents, cancer pédiatrique, modèle d'interdépendance acteur-partenaire

INTRODUCTION

From 1992 to 2017, an average of 1,000 new cancer cases per year have been reported among children in Canada (Ellison et al., 2021). Even though progress has been made in the treatment of childhood cancer, the risk of mortality remains significant (National Cancer Institute, 2019; Wang et al., 2016). Many cancer survivors experience long-term negative effects from the disease or its treatment (e.g., second neoplasms, organ dysfunction, psychosocial and cognitive problems; Geenen et al., 2007; National Cancer Institute). Therefore, pediatric cancer is undeniably challenging for parents. There is increasing evidence of the negative impact of pediatric cancer on parents' psychological well-being, with a significant subgroup of parents reporting clinical levels of distress, including severe symptoms of post-traumatic stress (Ljungman et al., 2014; Sultan et al., 2016). Systematic reviews have also revealed that approximately 27% of parents suffer from clinical levels of psychological distress (anxiety, depression, and post-traumatic stress) for up to 5 years after their child's diagnosis (Vrijmoet-Wiersma et al., 2008).

Beyond the impact of the child's illness on each parent's own psychological well-being, the emerging literature on couples in the context of pediatric cancer suggests that the illness may also affect parents' dyadic adjustment (Van Schoors et al., 2017). Dyadic adjustment reflects couples' contentment in their relationship, involving aspects such as cohesion, satisfaction, consensus, and affective expression (Jiménez-Picón et al., 2021; Spanier, 1976). Researchers studying dyadic adjustment in parents of children with cancer, for example, have examined relationship distress, relationship satisfaction, and relationship quality (Burns et al., 2018; Ljungman et al., 2014; Pai et al., 2007; Van Schoors et al., 2017, 2019; Wiener et al., 2017). Other studies in the context of pediatric cancer have investigated more precise aspects of relationship functioning. For instance, parents have reported a decline in intimacy (Burns et al.; Silva-Rodrigues et al., 2016; Van Schoors et al., 2017) and time spent with their partner (Burns et al.; Hooghe et al., 2020; Silva-Rodrigues et al.; Van Schoors et al., 2017; Yi et al., 2021), an increase in conflict (Kim et al., 2018; Long & Marsland, 2011; Pai et al.; Yi et al.), and a deterioration in their relationship (Burns et al.; Lavee & Mey-Dan, 2003) and sexual satisfaction following the cancer diagnosis (Burns et al.; Silva-Rodrigues et al.; Van Schoors et al., 2017). Parents often must reorganize their roles and responsibilities within the family to care for the sick child, resulting in less time for themselves and their relationship (Burns et al.; Silva-Rodrigues et al.; Vrijmoet-Wiersma et al., 2008). This leads

to reduced interactions, communication, shared decision-making, and emotional closeness among partners (Long & Marsland). However, other couples have reported increased relationship satisfaction following pediatric cancer (Burns et al.; Van Schoors et al., 2017). Several parents also reported greater closeness or intimacy over time, possibly as a result of experiencing hardship together (Arruda-Colli et al., 2018; Burns et al.; Hooghe et al.; Martin et al., 2016; Silva-Rodrigues et al.; Wiener et al.), suggesting that some couples may adapt better than others in this context.

Identifying protective and risk factors for relationship well-being in the context of pediatric cancer is crucial, as parents experiencing significant relationship problems may be less equipped to face the tremendous challenges of pediatric cancer together. This may increase their overall stress level and put them at a higher risk of experiencing other psychological problems (Van Schoors et al., 2019). Attachment may help explain these variations in parents' relationship adjustment because it has been associated with individual and relational functioning in a variety of stressful contexts (for a review, see Mikulincer & Shaver, 2016). While some studies have documented factors contributing to variability in relationship adjustment among these parents, including the quality of the partner relationship (Mader et al., 2018) and dyadic coping (Van Schoors et al.), to our knowledge, no study has investigated the role of attachment in explaining relationship adjustment.

Attachment Insecurities

Attachment is associated with how individuals regulate their emotions in stressful situations (for a review, see Simpson & Rholes, 2017). According to the *Attachment Diathesis-Stress Process Model* of Simpson and Rholes (2012), three types of negative events can evoke distress and activate the attachment system: (1) negative external events, (2) negative relational events, and (3) cognitive/emotional stressors. Once the attachment working models are activated, distress triggers attachment motivations to seek proximity, support, and reassurance from attachment figures (e.g., the partner), enabling individuals to regulate their distress and restore their relational and personal well-being. This model postulates that attachment working models can affect how individuals feel when subjected to stress and how they perceive their behaviors, their partner's behaviors, and the situation. In adulthood, attachment insecurity is described by two dimensions: attachment-related anxiety and avoidance (Brennan et al., 1998). Attachment-related anxiety represents the degree to which individuals doubt their self-worth and are concerned about being rejected (negative model

of self). Attachment-related avoidance represents the degree to which individuals are uncomfortable with intimacy and seek independence from others (negative model of others). Individuals with a secure attachment have low levels of attachment-related anxiety and avoidance.

Securely attached individuals tend to recognize their distress and seek help from their partner when needed, because they are confident that their partner will be available, responsive, and able to support them (Mikulincer & Shaver, 2016; Simpson & Rholes, 2012). In contrast, individuals with attachment-related avoidance doubt others' availability. Consequently, they tend to minimize or deny their distress, and try to remain in control in their relationship by avoiding physical or emotional proximity with their partner (Mikulincer & Florian, 1998; Mikulincer & Shaver; Simpson & Rholes). We suggest, therefore, that parents with higher attachment-related avoidance may perceive that their child's cancer has had a more negative impact on their relationship since they feel uncomfortable showing vulnerability and might want to limit their proximity with their partner to avoid being in contact with their own and their partner's distress. Such distancing behaviors may negatively affect relationship quality.

Individuals with high attachment-related anxiety tend to feel overwhelmed by their distress, and believe they are ill-equipped to cope with difficulties (Simpson & Rholes, 2012). Attachment-related anxiety is associated with higher symptoms of anxiety, depression, and perceived stress (Koopman et al., 2000; Marganska et al., 2013; Nolte et al., 2011). They are also hypervigilant to any signs of unavailability in their partner, which they perceive as a threat to their relationship. Consequently, they require constant reassurance about their lovability and the relationship strength (Brennan et al., 1998; Simpson & Rholes). Their need for support is often insatiable, regardless of the actual support provided by their partner (Cassidy & Shaver, 2016). Accordingly, we suggest that parents with attachment-related anxiety may perceive that their child's cancer has had a more negative impact on their relationship because they may feel overwhelmed by their distress and not adequately supported by their partner. The illness and treatment tend to consume time that would otherwise be spent on other couple activities. Parents with high attachment-related anxiety may, therefore, perceive cancer as a threat to their relationship and may suffer from reduced closeness with their partner.

Very few studies have examined parents' romantic attachment in the context of pediatric cancer or other pediatric illnesses. Santos et al. (2017) found that parents' avoidance of intimacy was associated with a weaker sense of family rituals and less family cohesion in the context of

pediatric cancer. In a study on mothers of children with congenital heart disease, those with higher attachment anxiety and avoidance reported lower relationship satisfaction (Berant et al., 2003). In a study on parents of children and adolescents with diabetes, higher levels of attachment-related avoidance, but not anxiety, were associated with higher levels of parenting stress due to a more negative perception of the impact of diabetes on the family (Moreira & Canavarro, 2016). In another study on parents of children with chronic gastrointestinal disease, attachment-related anxiety was associated with lower quality of life (Knez et al., 2011). These results suggest that attachment insecurities are linked to lower overall relationship satisfaction in the context of chronic childhood illnesses.

Beyond the effect of individuals' attachment representations on their own relationship adjustment, studies using dyadic designs indicate that individuals' attachment insecurities are also associated with their partner's experiences and perceptions (Simpson & Maryhope, 2012). In the context of pediatric cancer, Burns et al. (2017) found that mothers' perception of less role conflict at the time of diagnosis predicted their partner's better relationship adjustment 2 years later. In a cohort of parents of childhood cancer survivors (on average 15 years post diagnosis), Burns et al. (2018) also found that fathers reported higher relationship satisfaction when their partner reported that the cancer had brought about more positive changes in several areas of relationship functioning, including the quality of partner support, conflict, and overall relationship satisfaction. However, no study has investigated the association between parents' attachment insecurities and their perception of the impact of pediatric cancer on their relationship using a dyadic design.

OBJECTIVES

This study aimed (1) to describe the perceived impact of pediatric cancer on parents' relationship and (2) to explore the relationship between attachment insecurities (both anxiety and avoidance) in both parents and their perception of how pediatric cancer influences different facets of their relationship, employing a dyadic research design. We hypothesized that higher attachment-related anxiety and avoidance would be associated with parents' own perception of a more negative impact of the illness in all areas of relationship functioning. No assumptions were made regarding the association between parent's attachment insecurities and their partner's perception of the impact of the illness on the relationship due to a lack of empirical support for such partner effects.

METHOD

1. Participants

The study is a component of a longitudinal research initiated in the fall of 2013. The sample consisted of 51 mixed-sex Canadian couples, whose child had undergone cancer treatment within the past two years, whether the treatment was ongoing or completed. The child was required to be under 18 years old at the time of the study. Couples whose children were 18 years of age or older or had received cancer treatment beyond the last two years, as well as separated couples, were excluded from the study. Separated couples were not eligible to participate due to the dyadic design of the study. Only the cross-sectional data collected at Time 1 were used in this study, as the measure assessing the impact of cancer on the relationship was administered at baseline only.

2. Procedure

Couples were recruited through social media and patients' associations in Canada. A research assistant contacted interested couples to verify their eligibility. Both partners independently completed the questionnaires via a secure web platform. Each participant received a \$10 gift card as compensation.

3. Measures

Demographic information

Partners completed a sociodemographic questionnaire inquiring about their age, education, income, child (e.g., diagnostic, treatment history), and relationship characteristics.

Attachment Insecurities

The *Brief Experiences in Close Relationships* (Lafontaine et al., 2016), which has been validated in both French and English, assesses attachment-related anxiety and avoidance of intimacy (12 items) on a 7-point scale. Items are averaged to calculate total scores; a high score indicates higher levels of anxiety or avoidance, respectively. The scale has shown good validity and internal consistency (anxiety: $\alpha = .78-.87$; avoidance: $\alpha = .74-.83$; Lafontaine et al.). In this study, internal consistency of the French version (anxiety: $\alpha = .89$; avoidance: $\alpha = .72$) and the English version (anxiety: $\alpha = .85$; avoidance: $\alpha = .88$) was adequate.

Impact of the Cancer on the Couple

The 7-item *Impact of cancer on the couple* (Burns et al., 2018), developed in French and English, was designed to assess the impact of a child's cancer in seven areas of the parents' relationship: intimacy, quality of partner support, sexuality, conflict, time spent together and activities, relationship satisfaction, and overall impact of the child's illness on the couple. Items are rated on a 7-point scale (1 = *very negative effect* to 7 = *very positive effect*), except for the overall impact of the illness, which is rated on a different scale (1 = *This period has distanced us / was harmful to our relationship* to 7 = *This period has brought us closer / has strengthened our relationship*). Items are considered independently and are not summed into scores. To describe the nature of the changes reported by parents, area scores were recoded into three categories: negative change (score of 1 to 3), no change (score of 4), and positive change (score of 5 to 7). The internal consistency, comprising the seven items of the French ($\alpha = .90$) and English versions ($\alpha = .86$), was adequate.

Dyadic Adjustment Scale

The abbreviated *Dyadic Adjustment Scale* (Sabourin et al., 2005), available in French and English, assesses relationship satisfaction using four items rated on 6- and 7-point scales. A global score is calculated by summing the four items (between 0-21). A higher score is associated with greater relationship satisfaction. In this study, the internal consistency of the French ($\alpha = .71$) and English versions ($\alpha = .80$) was acceptable.

4. Data Analyses

The dataset is available on the Open Science Framework: https://osf.io/uctz5/?view_only=95a4bfa5d8444a41a898fb427da579a1. We handled missing data using simple imputation in SPSS software (expectation-maximization algorithm). We conducted preliminary analyses to identify potential control variables among the sociodemographic variables and medical characteristics. All continuous variables (attachment insecurities and impacts of illness) were normally distributed.

For the first objective, we conducted a repeated-measures MANOVA to compare mothers' and fathers' perceptions of the seven areas of relationship functioning, where gender served as a repeated measure for the couple. Intra-class coefficients (ICCs) were calculated to assess the degree

to which mothers and fathers agreed in their perceptions of the impact of cancer on the seven areas of the relationship. ICC values were categorized as follows: poor ($ICC < .40$), fair ($.40 \leq ICC \leq .59$), good ($.60 \leq ICC \leq .74$) or excellent ($.75 \leq ICC \leq 1.00$; Chicchetti, 1994).

For the second objective, we conducted path analyses in Amos software based on the *Actor-Partner Interdependence Model* (Kenny et al., 2006). This approach allowed us to test actor effects (i.e., the effect of a person's attachment insecurity on their own perceived impact of the illness) and partner effects (i.e., the effect of a person's attachment insecurity on their partner's perceived impact of the illness) in a single analysis. Seven models were tested, one for each relationship area, with both partners' attachment variables included as predictors of both partners' variables of perceived impact of cancer. The fit for each model was verified using non-significant chi-square values, a CFI value of .90 or higher, and a RMSEA value below .08, which are indicators of good fit (Kline, 2016). For each model, we conducted a within-dyad test of distinguishability (Kenny et al.) to identify gender differences in actor and partner effects. To do so, a model in which all actor and partner effects were constrained to be equal between fathers and mothers was compared to an unconstrained model using a chi-square difference test. Non-parametric bootstrapping (2000 samples) was used to calculate 90% confidence intervals. Table 1 shows standardized regression coefficients for all significant actor, partner, and gender effects.

For all models, we controlled for mothers' and fathers' relationship satisfaction on their perceived impact because there was a significant correlation between the variables ($.290 \leq r \leq .722, p \leq .05$). We also controlled for the relationship length on the perceived impact of mothers, except for the partner support model, because there was a significant correlation between the variables ($-.273 \leq r \leq -.355, p \leq .05$). In the model concerning the perceived impact on support, we also controlled for time that the child had been ill prior to diagnosis on the perceived impact of mothers ($r = -.796, p < .001$) and the relationship length on the perceived impact of fathers ($r = .356, p = .018$). These control variables allowed the models to represent the data more adequately.

Table 1*Actor and Partner Effects as Identified by APIM Models Predicting the Perceived Impact of Cancer on the Couple from Attachment Insecurities (n = 51 couples)*

	Actor effect		Partner effect	
	Mother	Father	Mother	Father
Predictors of the impact on intimacy				
Attachment-related anxiety	$\beta = .077$	$\beta = -.018$	$\beta = .147^*$	$\beta = .178^*$
Attachment-related avoidance	$\beta = .147$	$\beta = .006$	$\beta = .272^{**}$	$\beta = -.046$
Predictors of the impact on support				
Attachment-related anxiety	$\beta = -.134^*$	$\beta = -.316^{**}$	$\beta = .087$	$\beta = .107^*$
Attachment-related avoidance	$\beta = -.130^*$	$\beta = -.218^*$	$\beta = .210$	$\beta = .065$
Predictors of the impact on sexuality				
Attachment-related anxiety	$\beta = -.042$	$\beta = -.092$	$\beta = .255^{**}$	$\beta = .229^{**}$
Attachment-related avoidance	$\beta = .013$	$\beta = -.199$	$\beta = .348^{**}$	$\beta = .207^*$
Predictors of the impact on conflict				
Attachment-related anxiety	$\beta = .041$	$\beta = .037$	$\beta = .114$	$\beta = .282^{**}$
Attachment-related avoidance	$\beta = -.133$	$\beta = .260$	$\beta = -.132$	$\beta = .242$
Predictors of the impact on time and activities				
Attachment-related anxiety	$\beta = .036$	$\beta = .016$	$\beta = .178$	$\beta = .053$
Attachment-related avoidance	$\beta = -.031$	$\beta = -.048$	$\beta = .270^{**}$	$\beta = .193^*$
Predictors of the impact on satisfaction				
Attachment-related anxiety	$\beta = .159$	$\beta = .023$	$\beta = .115$	$\beta = .021$
Attachment-related avoidance	$\beta = .075$	$\beta = -.073$	$\beta = .078$	$\beta = .030$
Predictors of the overall impact on the relationship				
Attachment-related anxiety	$\beta = .049$	$\beta = -.094$	$\beta = .235$	$\beta = .000$
Attachment-related avoidance	$\beta = .047$	$\beta = -.090$	$\beta = .194$	$\beta = .103$

Note. $^{**} p < .01$, $^* p < .05$.

ETHICAL CONSIDERATIONS

The study received ethical approval (#CERFAS-2013-14-131-D) from the research ethics committee of the *Université de Montréal*.

RESULTS

Couples in the sample were mostly married (57.8%). Most participants had French as their native language (fathers = 79.5%, mothers = 84.1%) and identified as White (fathers = 84.1%, mothers = 97.7%). Detailed descriptive statistics of the sample are presented in Table 2.

Table 2

Demographic and Clinical Characteristics of the Participants

Child's characteristics	<i>M (SD) or N (%)</i>		
Diagnostic			
Leukemia	29.0 (56.9)		
Blastoma	6.0 (11.8)		
Lymphoma	5.0 (9.8)		
Other	9.0 (17.7)		
Missing data	2.0 (3.9)		
Age at diagnosis, years	6.0 (4.2)		
Age, years	9.7 (9.5)		
Sex of child			
Boys	30.0 (58.8)		
Girls	19.0 (37.3)		
Missing data	2.0 (3.9)		
Type of treatments			
Radiotherapy	18.0 (26.5)		
Bone marrow transplant	16.0 (23.5)		
Surgery	22.0 (32.4)		
Corticosteroids	8.0 (11.8)		
Chemotherapy	4.0 (5.9)		
Duration of illness prior to diagnostic (month)	1.9 (1.1)		
Relapse of the illness	4.0 (3.9)		
Treatment			
In treatment	61.0 (59.8)		
Completed	34.0 (33.4)		
Missing data	7.0 (6.9)		
Parents' characteristics	Fathers	Mothers	
	<i>M (SD) or N (%)</i>	<i>M (SD) or N (%)</i>	
Age	38.0 (8.4)	37.0 (6.4)	
Length of the relationship (years)	12.4 (5.9)	12.4 (5.9)	

Parents' characteristics	Fathers	Mothers
Level of education		
High School not completed	2.0 (3.9)	0.0 (0.0)
High School education	6.0 (11.8)	2.0 (3.9)
College education	13.0 (25.5)	11.0 (21.6)
Graduate studies	23.0 (45.1)	33.0 (64.7)
Other	2.0 (4.0)	3.0 (5.9)
Missing	5.0 (9.8)	2.0 (3.9)
Annual income		
Less than \$30,000	4.0 (7.9)	11.0 (21.5)
Between \$30,000 and \$90,000	35.0 (68.6)	29.0 (56.8)
More than \$90,000	7.0 (13.7)	7.0 (13.8)
Missing	5.0 (9.8)	4.0 (7.8)
Main occupation		
Full-time work	39.0 (76.5)	26.0 (51)
Part-time work	2.0 (3.9)	6.0 (11.8)
Stay at home	2.0 (3.9)	8.0 (15.7)
At school	0.0 (0.0)	2.0 (4.4)
Unemployment or sick leave	0.0 (0.0)	2.0 (3.9)
Other	3.0 (5.9)	6.0 (11.8)
Missing	5.0 (9.8)	2.0 (3.9)

1. Objective 1

Figure 1 represents the impact of cancer in each relationship areas, as per reported by mothers and fathers. More mothers reported a negative impact of the illness on intimacy, time and activities spent with their partner, and conflicts in the relationship, but a similar proportion of fathers reported a negative and a positive impact of the illness in these areas of the relationship. Most parents reported that the cancer had a positive impact on the quality of support in their relationship, but a negative impact on their sexuality. About half of mothers and fathers reported that their relationship satisfaction improved following the cancer, and 60% said that the illness had an overall positive impact on their relationship.

Mothers and fathers did not significantly differ on their perception of relationship changes following their child's illness, except for intimacy and sexuality (see Table 3). Mothers reported a more negative impact of the cancer on their intimacy than fathers, and a more positive impact of cancer on the support in their relationship than fathers. ICC values revealed that the level of agreement between parents on the perceived impact of the illness ranged from good to excellent. Preliminary bivariate correlations between attachment insecurities and areas of relationship adjustment in mothers and fathers are presented in Table 4.

Figure 1

Bar Charts Displaying the Nature of Relationship Changes for Mothers and Fathers (n = 51)

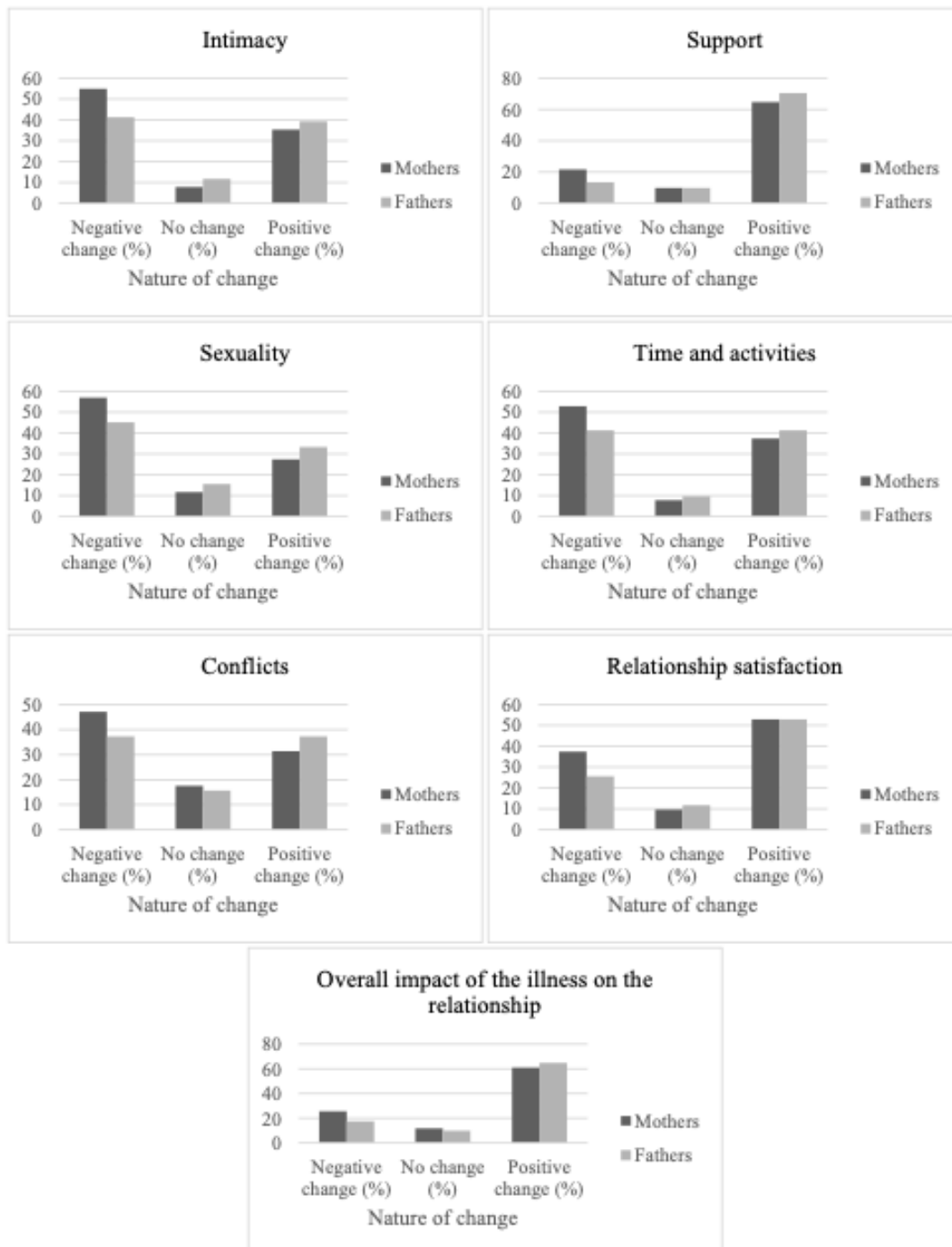


Table 3

Descriptive Statistics of the Variables of the Impact of the Illness on the Couple and Attachment in Fathers and Mothers (N = 51 couples)

	Fathers <i>M (SD)</i>	Mothers <i>M (SD)</i>	Repeated-measures MANOVA testing gender differences	ICC, 95% CI	Levels of agreement
Impact of cancer on the relationship					
Intimacy	4.05 (1.94)	3.61 (1.94)	$F(1,50) = 4.561, p = .038$	.820, $p < .001$ [.682-.898]	Excellent
Support	5.36 (1.61)	5.01 (1.65)	$F(1,50) = 2.110, p = .153$	.609, $p < .001$ [.322-.776]	Good
Sexuality	3.87 (2.03)	3.32 (1.92)	$F(1,50) = 4.185, p = .046$	.675, $p < .001$ [.435-.814]	Good
Conflict	4.05 (1.67)	3.76 (1.74)	$F(1,50) = 1.596, p = .212$	.690, $p < .001$ [.461-.823]	Good
Time and activities	3.98 (2.10)	3.73 (2.13)	$F(1,50) = 0.774, p = .383$	.699, $p < .001$ [.474-.828]	Good
Relationship satisfaction	4.86 (1.84)	4.51 (1.84)	$F(1,50) = 1.657, p = .204$	.614, $p < .001$ [.328-.779]	Good
Overall impact on couple	5.14 (1.79)	4.83 (1.87)	$F(1,50) = 1.829, p = .182$	.732, $p < .001$ [.533-.846]	Good
Attachment insecurities					
Attachment-related anxiety	3.29 (1.49)	3.71 (1.67)	$F(1,50) = 2.592, p = .114$	.456, $p = .015$ [.061-.687]	Fair
Attachment-related avoidance	2.70 (1.22)	2.54 (1.12)	$F(1,50) = 0.876, p = .354$	.656, $p < .001$ [.398-.803]	Good

Table 4*Bivariate Correlations Between the Study Variables in Mothers and Fathers (N = 51 couples)*

Variable	1	2	3	4	5	6	7	8	9
1. Support	-	.456*	.416**	.407**	.369*	.517**	.388**	-.177	-.256
2. Intimacy	.398**	-	.848**	.637**	.605**	.736**	.473**	-.035	.068
3. Sexuality	.452**	.715**	-	.641**	.710**	.649**	.359**	-.075	.090
4. Conflict	.520**	.566**	.589**	-	.521*	.522*	.324*	.078	-.045
5. Time and activities	.445**	.698**	.712**	.628**	-	.721**	.295*	.002	.019
6. Satisfaction	.658**	.708**	.731**	.740**	.763**	-	.587*	.011	-.023
7. Overall impact	.372**	.399**	.449**	.432**	.388**	.629**	-	-.086	-.007
8. Attachment-related anxiety	-.363**	-.126	-.169	-.089	-.054	-.123	-.197	-	-.123
9. Attachment-related avoidance	-.300*	-.194	-.333*	-.116	-.178	-.384**	-.324*	.095	-

Note: The correlations above the diagonal are those of mothers and the correlations below the diagonal are those of fathers. ** $p < .01$, * $p < .05$.

2. Objective 2

Impact of Cancer on Intimacy

The model had adequate fit indices ($\chi^2(18) = 22.816, p = .198$; CFI = .959; RMSEA = 0.073, 90%CI [.000; 0.154]). Mothers' and fathers' attachment-related anxiety were related to their partner's perception that the illness had a more positive impact on their intimacy (partner effects). Mothers' attachment-related avoidance was also related to their partner's perception that the illness had a more positive impact on their intimacy (partner effect). Attachment insecurities were not associated with parents' own perception of change in intimacy. The model explained 51.2% of the variance in mothers' and 56.6% of the variance in fathers' perception of change in intimacy.

Impact of Cancer on Support

The model had adequate fit indices ($\chi^2(26) = 35.776, p = .096$; CFI = .906; RMSEA = .087, 90%CI [.000; .151]). Mothers' and fathers' attachment-related anxiety and avoidance were related to their own perception that the illness had a negative impact on the support in their relationship (actor effects). Fathers' attachment-related anxiety was also related to their partner's perception that the cancer had a more positive impact on the support in their relationship (partner effect). Mothers' attachment insecurities were not associated with fathers' perception of change in support. The model explained 67.4% of the variance in mothers' and 43.7% of variance in fathers' perception of change in support.

Impact of Cancer on Sexuality

The model had adequate fit indices ($\chi^2(19) = 21.363, p = .317$; CFI = .980; RMSEA = .050, 90%CI [.000; .138]). Mothers' and fathers' attachment-related anxiety and avoidance were related to their partner's perception that the illness had a more positive impact on their sexuality (partner effects). Attachment insecurities were not associated with parents' own perception of change in their sexuality. The model explained 58.0% of the variance in mothers' and 61.3% of the variance in fathers' perception of change in sexuality.

Impact of Cancer on Conflicts

The model had adequate fit indices ($\chi^2(16) = 20.810, p = .186$; CFI = .948; RMSEA = .078, 90%CI [.000; .161]). Fathers' attachment-related anxiety was significantly related to mothers'

perception that the cancer had a positive impact on conflicts in the relationship (partner effect). Attachment insecurities were not associated with parents' own perception of change in conflicts and mothers' attachment insecurities were not associated with fathers' perception of change in conflicts. The model explained 42.9% of the variance in mothers' and 40.5% of the variance in fathers' perception of change in conflicts.

Impact of Cancer on Time and Activities Spent Together

This model had adequate fit indices ($\chi^2(19) = 24.262, p = .186$; CFI = .940, RMSEA = .074, 90%CI [.000; .152]). Mothers' and fathers' attachment-related avoidance were associated with their partner's perception that the illness had a more positive impact on time and activities spent together as a couple (partner effects). Parents' attachment-related anxiety was not associated with their partner's perception of change and attachment insecurities were not associated with parents' own perception of change in time and activities spent together. The model explained 29.7% of the variance in mothers' and 43.5% of variance in fathers' perception of change in time and activities spent together.

Impact of Cancer on Relationship Satisfaction

The model had adequate fit indices ($\chi^2(19) = 22.839, p = .245$; CFI = .960; RMSEA = .064, 90%CI [.000; .145]). However, there were no statistically significant effects in this model.

Overall Impact of Cancer on the Relationship

The model had adequate fit indices ($\chi^2(19) = 24.071, p = .193$; CFI = .950; RMSEA = .073, 90% CI [.000; .152]). There were no statistically significant effects in this model.

DISCUSSION

This dyadic study described the perceived impact of pediatric cancer in different areas of relationship functioning in parents and explored the relationship between attachment insecurities (anxiety and avoidance) in both parents and their perception of how pediatric cancer influenced different facets of their relationship. Parents who experience pediatric cancer not only face individual consequences, but also relational ones (Burns et al., 2018; Lavee & Mey-Dan, 2003;

Long & Marsland, 2011; Pai et al., 2007). Parents who experience relationship distress are more likely to experience high levels of stress in the context of pediatric cancer (Lavee, 2005), as they may struggle to face the challenges of their child's cancer together. However, few studies have specifically focused on the relationship and well-being of couples facing pediatric cancer. This study, therefore, adds to this relatively small body of research. Overall, the results indicate that parents may experience both negative and positive impacts of cancer on their relationship, which is consistent with previous research (Burns et al.; Hooghe et al., 2020; Kim et al., 2018; Lavee & Mey-Dan; Long & Marsland; Pai et al.; Silva-Rodrigues et al., 2016; Van Schoors et al., 2017; Yi et al., 2021). Unexpectedly, attachment insecurities were generally not associated with parents' perception that the cancer had more adverse consequences on their relationship.

Attachment and Participants' Own Perception of Relationship Change

As expected, higher attachment-related anxiety and avoidance of mothers and fathers were related to their own perception of a more negative impact of the illness on the quality of support in their relationship. These findings align with previous studies. Specifically, individuals with higher attachment-related anxiety often have an insatiable need for support, especially when experiencing high levels of distress, despite the support provided by their partner (Collins & Read, 1990). Contrarily, individuals with higher attachment-related avoidance tend to seek little support from their partner and provide little support themselves (Mikulincer & Shaver, 2016). In a high-stress context, where the need for partner support is likely increased, this could explain why both mothers and fathers with attachment insecurities reported a more negative impact of the illness on the support within the relationship. This is consistent with the results of a study involving mothers whose child was diagnosed with congenital heart disease, showing that mothers with secure attachment perceived more available support and were more likely to seek support than mothers with insecure attachment (Berant et al., 2001).

Attachment and the Partner's Perception of Relationship Change

Surprisingly, the results showed that higher attachment-related anxiety in parents was associated with their partner's perception of a more positive impact of cancer on intimacy and sexuality. Additionally, higher attachment-related anxiety in fathers was related to mothers' perception of a more positive impact of the cancer on the level of conflict and support in the

relationship. Attachment theory can help to understand these results. Stressful situations, such as the experience of pediatric cancer, tend to activate the attachment system in individuals with higher attachment-related anxiety. When their personal well-being or their relationship is threatened, these individuals fear being abandoned by their partner and tend to seek closeness and reinsurance by their partner (Simpson & Rholes, 2012). Such behaviours may have contributed to their partner's perception that the cancer improved intimacy, whether emotional or sexual, within the relationship. In the context of pediatric cancer, sexuality could represent an opportunity for parents to spend time together as a couple without the concerns and duties towards their sick child. Studies have shown that sexuality can be used to fulfill attachment needs, either an individual's own needs or their partner's needs (Beaulieu et al., 2022; Impett et al., 2008). Similarly, fathers higher in attachment-related anxiety who were worried about losing their child and who were likely in great need of reassurance from their partner could have sought more closeness and attempted to avoid conflicts in order to preserve their relationship during a time of high stress and uncertainty. These behaviors may also have contributed to mothers perceiving their partner as being more present, supportive, and involved as they faced the experience of cancer. As a result, mothers may have perceived that the illness had a beneficial impact on their relationship, with better support and fewer or less intense conflicts.

Higher attachment-related avoidance of parents was also associated with their partner's perception of a more positive impact on sexuality and time and activities spent together. Higher attachment-related avoidance in mothers was also related to fathers' perception of a more positive impact of cancer on intimacy. When individuals undergo high stress, those who tend to avoid intimacy often hide their distress and have an intensified need not depend on others (Simpson & Rholes, 2012). Therefore, it is possible that parents with higher attachment-related avoidance may have appeared to handle the situation well, which may have seemed positive in the eyes of their partner. The fact that parents higher in attachment avoidance do not show too much distress could also reduce the emotional burden for the couple. In the context of pediatric cancer, attachment-related avoidance may help partners navigate the more acute and difficult phases of the illness, by helping parents remain focused on the tasks and medical follow-ups with the child, rather than being overwhelmed by emotional distress. In the short run, this could be helpful to both partners.

However, research in attachment and coping shows that avoidance strategies can be detrimental in the long run and can contribute to increasing distress over time (Birnbaum et al.,

2012). Additional research would be needed to clarify the effect of attachment avoidance on parents' adjustment over time.

STRENGTHS AND LIMITATIONS

This study is one of the very few that have investigated the factors associated with relationship adjustment in the context of pediatric cancer. However, it has some limitations that warrant discussion. The cross-sectional design precluded us from inferring causal relationships between the variables. Longitudinal studies would allow verifying how the perceived impact of cancer on the relationship changes over the course of the illness and the effect of attachment in the trajectories. Moreover, the participants' responses were based on self-reported questionnaires and may have been biased by social desirability or participants' mood or relationship satisfaction during the completion of the questionnaires. Participants' responses may also be influenced by a recall bias. Due to the limited sample size in a rare clinical population, we did not apply statistical corrections for multiple modeling, and did not include all outcome variables in a single model. Clinical populations are difficult to recruit, and the experience of pediatric cancer is also rare among the general population, explaining the small sample size. Finally, the sample is limited in terms of diversity, with most parents identifying as White, having completed graduate studies, and all couples being intact mixed-sex couples. Therefore, the results may not generalize to couples with lower education levels, same-sex couples or couples who have separated. Othman et al. (2011) found that parents dealing with childhood cancer with higher education levels had higher cancer knowledge, which was linked to lower stress levels. The couples in our sample may therefore have had lower levels of stress affecting the perceived impact of cancer on their relationship.

CLINICAL IMPLICATIONS

Our findings bear significant implications for clinical practice. Mental health and other health professionals could benefit from assessing attachment insecurities when counseling individuals who experience changes in their relationship following a diagnosis of cancer in their child. The ECR-12 is a concise assessment tool well suited for clinical applications (Lafontaine et al., 2016). Understanding an individual's attachment insecurities may offer valuable insights into their concerns about their relationship, how they assess stress, their emotional regulation, coping

strategies, self-confidence in handling stressors, and their inclination to seek support from others (Mikulincer & Shaver, 2016). These aspects may all be the target of specific interventions such that the cancer experience may be appraised and experienced differently. Whereas addressing persistent attachment insecurities usually necessitates extended therapeutic interventions, brief interventions focused on factors associated with attachment insecurities, particularly coping strategies, could also prove beneficial in mitigating stress and promoting improved adjustment and relationship quality for both parents.

CONCLUSION

This study illustrates the importance of considering attachment insecurities for understanding both partners' perceptions of the changes that occur in their relationship because of facing a life-threatening illness with their child. The results suggest that in the first two-year post-diagnosis, parents may experience both positive and negative impacts of cancer on their relationship. Attachment insecurities appear to be associated with the parents' own perception of a more negative impact of the illness but are linked to benefits for the relationship as perceived by their partner. These findings suggest that attachment insecurities may not always have negative impacts in extreme situations like pediatric cancer (at least in the early years post-diagnosis). For instance, whereas higher attachment-related anxiety in mothers and fathers might promote reconciliation and greater relationship involvement, higher attachment-related avoidance could possibly help alleviate the emotional burden felt by parents.

Authors' contributions:

KP and SS designed the study and supervised data collection. SL collected the data. KP supervised data analysis. NB and SL analyzed the data. SL organized the article and wrote the first draft. KP, NB and SL then went back and forth to revise the article. All authors have read, reviewed, and approved the final version of the manuscript, each having substantially contributed in a meaningful way.

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