

Article

## Exploring Informant Concordance of Child Psychological Functioning in Parent-Child Dyads Following Medical Traumatic Stress

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### ABSTRACT

*Background:* Early childhood is a period of heightened vulnerability to medical trauma stemming from injury or illness. Such experiences can lead to both physical and emotional consequences for children. Assessing mental health in this context typically relies on both parent and child reports; however, discrepancies are common and have been linked to poorer psychological outcomes. Research indicates that lower concordance between parent and child reports is associated with greater psychosocial difficulties in children. Moreover, parental perceptions are often influenced by their own emotional distress. Despite these established patterns, there remains a need for research specifically focused on children who have undergone surgical procedures, which can be both stressful and potentially traumatic. *Methods:* This study examined parent-child concordance in reports of psychological functioning following surgical procedures in children ages 7 to 17 years. Participants were 157 parent-child dyads who reported independently on the child's psychological functioning. *Results:* Overall, agreement between parent and child reports was relatively high for mental health domains, particularly for depressive symptoms. Factors such as the child's gender, parent distress, and child distress were linked to concordance levels. Males demonstrated higher concordance of anxiety and PTSD symptoms but lower concordance of depressive symptoms than females. Additionally, parents with more negative views of their child's surgical experience reported worse child outcomes across anxiety, depression, and PTSD, even after accounting for the child's self-reports. *Conclusion:* These results emphasize the value of dual-informant assessments and highlight the need to consider gender-related factors when evaluating and responding to internalizing symptoms in children.

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**KEYWORDS:** parent-child; concordance; depression; anxiety; posttraumatic stress disorder

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## INTRODUCTION

When working with children in healthcare settings, the use of reports from multiple informants is considered the gold standard of practice [1]. Typically, the parent will report on the child's experience, and the child will also provide a self-report on their own experience [2]. It is important to note that parents' reports of their child's experience are from their own subjective perspective. Parents provide information on how they perceive their child is acting or feeling from their perspective, which may be distinct from their child's point of view. As such, gathering information from multiple sources allows providers to gain a more comprehensive understanding of the child's behaviors and life experiences. Multiple informant assessments have been used across a variety of settings to provide valuable information on child functioning, including emotional and behavioral functioning. Furthermore, gathering dual informant information provides a more valid and reliable assessment of the individual [3]. Single-informant information is intrinsically biased by the subjective experience of the individual. Furthermore, research supports and encourages the use of multiple informants in developmental psychopathology in children and adolescents, due to evidence that each observer contributes unique information about internalizing and externalizing behavior problems [2,4,5]. While some multiple informant reports reflect moderate agreement of mental health symptoms, it is important to consider the unique experiences of each informant, particularly the child's personal attributes and behaviors [6,7].

While obtaining both child-report and parent-report is the "gold standard" for clinical practice, a challenge with this approach is that child-report and parent-report frequently do not align. Parents and children often disagree about the child's symptoms, behaviors, experiences, and functioning. Low levels of agreement between parent and child reports are referred to as parent-child discordance, and high levels of agreement between parent and child reports are referred to as concordance. Discordance between multiple informant sources has been widely documented across different methods of assessment (e.g., self-report measures, structured interviews, and computerized assessments) [8–10]. It has also been observed in both clinical and nonclinical samples and across a variety of cultural backgrounds [11–13]. However, it is important to note that informants who share a similar social role, such as mothers and fathers, have shown increased levels of agreement in their emotional and behavioral reports of their child, compared to informants who do not share similar social roles, such as a teacher or a peer [14]. These findings highlight the significance of social contexts in the evaluation of children's mental health and behaviors.

In research with children and families, discrepancies between parent reports and child reports focus on child outcomes or symptoms associated with psychopathology diagnoses [8,15]. Parent and child reports often show higher concordance of observable symptoms and externalizing

problems but lower concordance of unobservable symptoms and internalizing problems [7]. Low concordance rates between parent and child reports of internalizing problems are thought to reflect the social contexts in which children display mental health concerns, such as home or school, and parents may not always accurately observe their child within or across these contexts [16]. Plourde and colleagues [6] conducted a study that showed parent-child agreement of anxiety and depressive symptoms varied, with poor to good agreement for anxiety and poor to moderate agreement for depression. Discordance between the parent and the child may result from parental perceptions of the child's limitations due to the depressive symptoms [17]. Regardless, these results highlight the importance of obtaining both parent and child reports of anxiety and depression symptoms.

Furthermore, parent and child concordance has been shown to be associated with PTSD symptoms in children. In one study of children in a pediatric outpatient setting, child reports of PTSD symptoms were strongly associated with PTSD in the child, and parents' self-reports of PTSD symptoms were associated with increased parental endorsement of PTSD symptoms in their child [18]. However, the parents' report of their child's PTSD symptoms was not significantly associated with the child's diagnosis. This finding suggests that parents' reports about their child's symptoms are often influenced by their own distressing symptoms related to their child's trauma.

When assessing mental health symptoms in children, parent-child agreement may influence the child's diagnosis. Diagnostic agreement between children and their parents is associated with positive outcomes, specifically related to mental health symptoms and treatment. Concordance has been associated with decreased attrition in therapy, decreased parent-reported internalizing problems, and improvement for anxiety symptoms [19,20]. These findings suggest that improving parent-child concordance should be valued as an essential aspect of treatment for children to promote improved quality of life, enhance coping skills, and reduce future risk.

Conversely, discordance between the parent and child has been linked to negative outcomes such as increased conduct problems at school, police involvement, drug use, self-harm, and mental health treatment referrals [12,21]. Furthermore, discordance between parent and child reports results in barriers to obtaining appropriate treatment for the child. For example, different informants often disagree on which issues should be addressed first when discussing adolescent treatment, which makes treatment planning more difficult [22]. Clinicians can approach parent and child discordance in different ways. However, they often rely on parents' reports, as they are the ones who ensure that the child attends therapy and are asked to adapt the child's environment in ways that implement therapy recommendations. Additionally, they play a primary role in deciding whether and for how long the child continues therapy.

Once again, this role highlights the importance of improving parent and child concordance to ensure appropriate treatment is implemented.

It is especially important to include both the parent and child reports of symptoms following an illness or injury, as children are at risk of developing posttraumatic stress disorder (PTSD) and other adverse psychological outcomes [23]. However, the literature lacks sufficient evidence focusing on the relationship between how the parent understands their child's trauma experience and how the child perceives their own trauma experience. Thus, it is important to consider this relationship regarding the impact on the child's trauma response and overall psychological health. This study aimed to address the gaps in the literature surrounding parent-child concordance by investigating children who have had a surgical procedure, which can be a stressful or potentially traumatic experience for children. We aimed to add to the literature by comparing parent and child reports of the child's psychological health following the child's surgical procedure, identifying factors that predict parent-child concordance, and evaluating the impact of parent-child concordance on the child's trauma response. We hypothesized that there would be low to moderate levels of concordance between parent and child reports of the child's psychological health, that higher child distress would be associated with greater concordance, that higher parent distress would be associated with lower concordance, and that increased concordance would be associated with decreased trauma response.

## **MATERIALS AND METHODS**

### **Participants**

Participants were 157 parents and their children (dyads) located in the United States. Children were eligible to participate in the study if they were between the ages of 7 and 17, had a surgical procedure in the past 12 months, and were able to read and answer questions in English independently. A surgical procedure in this study was operationalized as a medical procedure that involves surgery, including both emergency and elective procedures. Only complete dyads in which both the parent and child provided data were included in this study. The sample of parents was 70% female, 78% White, 20% Black, 1% multiracial, and 3% Hispanic. Children were ages 7 to 17 ( $M = 11.65$ ,  $SD = 2.74$ ), with the majority (73%) between the ages of 7 and 13 years. The sample of children was 61% male, 75% White, 20% Black, 1% Asian, 3% multiracial, and 5% Hispanic. Additional information on the parent characteristics is provided in Table 1, and further information on child characteristics is provided in Table 2.

**Table 1.** Parent Sample Characteristics.

<b>Variable</b>	<b><i>n</i></b>	<b>%</b>
<b>Sex</b>		
Female	110	70
Male	47	30
<b>Age (years)</b>		
20 to 29	5	3
30 to 39	76	48
40 to 49	58	37
50+	10	7
Did not report	8	5
<b>Race</b>		
Black	32	20
White	123	78
Asian	0	0
Multiracial	1	1
Did not report	1	1
<b>Ethnicity</b>		
Hispanic	5	3
Non-Hispanic	152	97
<b>Relationship to Child</b>		
Biological Mother	109	69
Biological Father	45	29
Adopted Mother	1	1
Stepmother	2	1
<b>Education</b>		
Did not complete high school	2	1
High school or GED	6	4
Some college or Associate's	18	12
Bachelor's	87	55
Graduate	43	27
Did not report	1	1
<b>Income</b>		
Less than \$25,000	3	2
\$25,000–\$50,000	13	8
\$50,000–\$75,000	29	19
\$75,000–\$100,000	23	15
More than \$100,000	87	55
Did not report	2	1

*Note.* *N* = 157.

**Table 2.** Child Sample Characteristics.

Variable	<i>n</i>	%
Sex		
Female	61	39
Male	96	61
Age (years)		
7 to 13	114	73
14 to 17	43	27
Race		
Black	31	20
White	119	75
Asian	1	1
Multiracial	5	3
Did not report	1	1
Ethnicity		
Hispanic	8	5
Non-Hispanic	149	95
First Time Surgery		
Yes	116	74
No	41	26
Time Since Surgery		
Less than 6 months ago	92	59
6 months to 12 months ago	65	41
Type of Surgery		
Emergency	46	29
Urgent	15	10
Scheduled	89	57
Elective	7	4

Note. *N* = 157.

### Procedure

The study utilized three primary recruitment mechanisms 1) physical flyers placed in post-op surgical packets if permitted by relevant healthcare facilities, placed in or electronically disseminated by healthcare clinics, organizations serving pediatric populations (i.e., pediatric camps supporting children with medical needs or surgeries), and distributed at community events and other locations frequented by families; 2) Research Match and other participant registries; and 3) through posting on social media (e.g., Facebook). In the final sample, 30% (*n* = 46) of dyads were recruited via flyers distributed at healthcare clinics and other organizations, 20% (*n* = 31) were recruited via Research Match, and 51% (*n* = 80) were recruited from social media.

Parents/caregivers/legal guardians and their children completed individual Qualtrics surveys and were instructed not to share their answers with one another. Participants recruited using the QR code on flyers were emailed a \$25 Amazon gift card after the child and the parent completed their surveys. Participants recruited through Research Match were not compensated to disincentivize fraudulent respondents. Surveys

sent to participants recruited via social media included additional questions to prevent fraudulent and inattentive respondents [24,25]. Participants recruited via social media were eligible for compensation and included in data analyses if they passed 8 out of 9 of the checks for inattentive or fraudulent responding. Participants who met the eligibility criteria were emailed a \$25 gift card after the child and the parent had completed their surveys. Participants who failed to meet the eligibility criteria and/or did not pass the required attention checks were not compensated, and their data were discarded and not included in analyses.

### **Measures**

The child and the parent each independently completed a survey that included measures assessing the child's medical experience and psychological functioning (i.e., depression, anxiety, posttraumatic stress). The parent was also asked to provide demographic information, including age, gender, race/ethnicity, education, and number of children. Parents/caregivers were also asked to provide information about their child's medical procedure, including the type of surgery (i.e., emergency, urgent, scheduled, elective).

#### *Brief Illness Perception Questionnaire (BIPQ)*

Parents/caregivers and their child completed the Brief Illness Perception Questionnaire [26], which consists of nine items rated on a scale from 0 (minimum) to 10 (maximum). Five of the items assess cognitive perceptions, two items assess emotional representations, one item assesses illness comprehension, and one item was an open-ended response question asking participants to list the three most important causal factors related to their illness. A higher BIPQ score indicated a more threatening view of the illness (range 0–80). Evidence shows that the BIPQ is a valid and reliable measure of illness perceptions in various illness groups [26]. It has demonstrated fair to good internal consistency ( $\alpha = 0.72$ – $0.86$ ) [27] in rehabilitation patients and acceptable 6-month test-retest reliability in adult rheumatoid arthritis patients with correlations ranging from 0.5 to 0.82 for all scales, excluding timeline [28]. The internal consistency for both parent report and child report in the present study was acceptable ( $\alpha = 0.73$ ).

#### *Revised Children's Anxiety and Depression Scale (RCADS-25)*

Parents/caregivers and their child completed the parent-report version of the Revised Children Anxiety and Depression Scale (RCADS-25) [29]. The RCADS-25 is a 25-item measure completed by the parent that assesses their child's anxiety and depressive symptoms. Parents were asked to indicate how often each thing happened to their child using four response options: 0 (never), 1 (sometimes), 2 (often), or 3 (always). Each item was summed for a total score that was then converted to a t-score that accounted for

gender and grade. A higher score reflected a greater degree of symptom severity, with cut-off scores between 65 and 69 indicating borderline clinical threshold and scores of 70 or greater indicating symptoms above the clinical threshold [29]. The RCADS is a widely used and validated measure with good internal consistency of Cronbach's alpha values ranging from 0.82 to 0.93 [30]. The internal consistency for the parent report in the present study was excellent ( $\alpha = 0.94$ ) and the internal consistency for the child report was also excellent ( $\alpha = 0.95$ ).

#### *PTSD Reaction Index (PTSD-RI)*

Parents/caregivers and their child completed the parent-report version of the UCLA PTSD Reaction Index for Children/Adolescents [31]. The PTSD-RI is a 31-item measure that assesses posttraumatic stress symptoms based on the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) criteria in children and adolescents ages 7 to 18 years [32]. Parents completed each item, indicating the frequency of occurrence of PTSD symptoms in their child during the past month (0 = none of the time to 4 = most of the time). For the total PTSD symptom scale, a cutoff score of 35 is used to signify probable PTSD [33]. The PTSD-RI has been found to have acceptable internal consistency, with Cronbach's alphas ranging from 0.74 to 0.91 [34]. Additionally, it demonstrates good convergent validity, with correlations of 0.70 with the PTSD Module of the Schedule for Affective Disorders and 0.82 with the Child and Adolescent Clinician-Administered PTSD Scale [7]. The internal consistency for both parent report and child report in the present study was excellent ( $\alpha = 0.96$ ).

#### *Depression Anxiety Stress Scales (DASS)*

Parents/caregivers completed the DASS [35] to evaluate their own level of distress. The DASS is a 42-item self-report measure with subscales for depression, anxiety, and stress. Parents reported how much each statement applied to them over the past week using a 4-point Likert-type scale (0 = did not apply to me at all to 3 = applied to me very much, or most of the time). Scores were calculated by summing items specific to each subscale. Higher scores indicated greater symptom severity, with established cutoff scores of 24 to 29 indicating mild distress, 30 to 39 moderate, 40 to 46 severe, and 47 or above extremely severe. Extant research indicates that the DASS subscales have excellent internal consistency ( $\alpha = 0.89$ – $0.93$ ) [36] and strong convergent validity of significant correlations with established anxiety, depression, and stress measures [37]. Internal consistency for the present study was excellent ( $\alpha = 0.98$ ).

#### **Statistical Analysis Plan**

Statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS v.29). Prior to analyses, the data were cleaned and

checked for missingness, outliers, normality, and distribution of variables. A total of 270 parents consented; however, 101 of those parents did not complete the survey. A total of 169 children provided assent; however, 6 of those children did not complete the survey. Therefore, 107 cases were excluded from the analyses as incomplete dyads. Six parent-child dyads were excluded from data analyses due to suspicious free responses and failure of the required number of attention checks, resulting in a total sample size of 157 parent-child dyads. The proportion of missing responses was less than 3%, so estimation of maximum likelihood was used to address the missing data. Normal distribution assumptions were examined using the Shapiro-Wilk test. The skewness and kurtosis of all primary observed variables were within acceptable ranges [38].

While methods for calculating informant discrepancy scores vary across studies [12,15,16], the choice of approach often depends on the research question and analytic goals. In this study, multiple approaches were used to assess parent-child discrepancies, tailored to align with the specific aims of each hypothesis. This strategy supports a more nuanced exploration of discrepancies across various domains.

A two-way random effect model (absolute agreement) intraclass correlations, model 2, k (ICC 2, k) was used to compare parent report and child report of the child's experience following a surgical procedure. For each measure (RCADS and PTSD-RI), parent-child concordance was evaluated using a two-way random effects model (absolute agreement), intraclass correlations, model 2, k (ICC 2, k). ICCs reflect the correlation and agreement between two sets of measurements (i.e., parent report and child report), with the extent to which their ratings are equal indicated by absolute agreement [39]. ICC agreement was defined as "low" (less than 0.50), "moderate" (values between 0.50–0.75), "good" (values between 0.75–0.90), and "excellent" (values greater than 0.90) based on the 95% CI [40]. A paired samples t-test was used to determine mean differences between parent and child report total scores and subscales for all measures. All composite-level analyses were stratified by child gender.

Spearman's correlations were conducted to examine whether factors such as child age, child distress, and parent distress predict the level of parent-child concordance. Spearman's correlation was used because the relationships between parent-child concordance and the identified factors were not normally distributed and were monotonic rather than strictly linear [41]. Concordance was calculated by the absolute discrepancy score (absolute value of the parent score minus the child score), where higher scores indicate greater discrepancy or less agreement.

A hierarchical linear regression was conducted to examine the unique impact of parents' perceptions of their child's illness experience on the child's psychological health while controlling for the child's own illness perception. Specifically, we examined how much parental illness perception explained the variance in the child's psychological health beyond the child's own illness perception. The child's trauma response

symptoms, including anxiety, depression, and PTSD, were the outcome variables. The child's illness perception was entered as a predictor in the first block, and the parents' perception of the child's illness was added as an additional predictor in the second block, with the child's trauma response remaining the outcome of interest. Child trauma response was defined as psychological health, including symptoms of depression, anxiety, and posttraumatic stress. As such, the depression and anxiety subscales from the RCADS and the PTSD-RI were included in the analysis. In addition, BIPQ scores were recoded and categorized into three threat perception groups: low (<42), moderate (42–49), and high ( $\geq 50$ ). These cutoff scores were based on classifications reported in individuals with recently acquired spinal cord injuries [42].

## RESULTS

### Descriptive Statistics for Mental Health Symptoms

#### *Parent Mental Health Symptoms*

Parents reported total scores for their own mental health symptoms ranging from 0–115. On average, parent mental health symptoms fell below the clinical cutoff of 33 ( $M = 19.56$ ,  $SD = 23.17$ ); however, 20% of parents ( $n = 31$ ) scored above this cutoff, indicating mild to extremely severe levels of mental health symptoms. Specifically, on average, parents reported anxiety symptoms below the clinical cutoff of 8 ( $M = 5.85$ ,  $SD = 7.48$ ), depressive symptoms below the clinical cutoff of 10 ( $M = 5.50$ ,  $SD = 8.25$ ), and stress symptoms below the clinical cutoff of 15 ( $M = 8.21$ ,  $SD = 8.59$ ).

#### *Child Mental Health Symptoms*

Total scores for child anxiety and depressive symptoms as reported by parents ranged from 0–57, with 18% of parents reporting their child's anxiety and depressive symptoms above the clinical cutoff of t-score  $\geq 70$ . Specifically, 15% of parents reported their children's symptoms met the clinical cutoff for anxiety (15%), and 13% of parents reported their children's symptoms met the clinical cutoff for depression. Total scores for self-reported anxiety and depressive symptoms ranged from 0–67, with 27% of children reporting their anxiety and depressive symptoms above the clinical cutoff of t-score  $\geq 70$  (Table 3). Total scores for PTSD symptoms reported by parents ranged from 0–64, and 11% ( $n = 17$ ) of parents reported that their child experienced symptoms indicative of probable PTSD with a cutoff score of 35 or greater. Total scores for self-reported PTSD symptoms ranged from 0–69, and 12% ( $n = 18$ ) of children reported symptoms above the clinical cutoff score of 35 or greater (Table 3).

**Table 3.** Prevalence of Clinically Elevated Psychological Health and Quality of Life Scores.

RCADS	Parent Report <i>n</i> (%)		Child Report <i>n</i> (%)	
	Low Severity	High Severity	Low Severity	High Severity
Total	126 (80)	28 (18)	103 (66)	43 (27)
Child Anxiety	127 (81)	24 (15)	114 (73)	36 (23)
Child Depression	131 (83)	21 (13)	110 (70)	38 (24)
PTSD-RI	Subclinical	Clinical	Subclinical	Clinical
Child PTSD	140 (89)	17 (11)	139 (88)	18 (12)

*Note.* RCADS Low Severity = T-scores below 65; Medium Severity (Borderline Clinical Threshold) = T-scores in the 65–69 range; High Severity (Clinical Threshold) = T-scores of 70 or above; Medium Severity T-scores were not included, as no participants fell within this category; PTSD-RI Subclinical = Total score fell below the cutoff of 35; Clinical = Total score of 35 or greater.

### Parent-Child Report Concordance

When evaluating the child's experience following surgery, agreement for anxiety and PTSD symptoms ranged from moderate to good, and agreement for depressive symptoms ranged from good to excellent based on 95% CI's (Table 4). Mean difference scores were negative across all domains (i.e., anxiety, depression, and PTSD), indicating children consistently reported experiencing more symptoms than their parents perceived them to have felt. All ICCs were statistically significant at the  $p < 0.05$  level, suggesting that the agreement observed between parents and children is unlikely to have occurred by chance. All notable differences were found to be statistically significant at the  $p < 0.05$  level.

**Table 4.** Reliability and Mean Differences of Parent and Child Report Ratings on Child Psychological Health, Overall and by Child Gender.

Measure	ICC [95% CI]	Paired t-test [95% CI]	<i>d</i>
<b>RCADS</b>	0.87 [0.81, 0.91]**	-2.69 [-3.99, -1.40]**	(-0.33)**
Males	0.87 [0.79, 0.92]**	-3.21 [-5.05, -1.38]**	(-0.35)**
Females	0.87 [0.77, 0.92]**	-1.87 [-3.58, -0.17]*	(-0.28)*
<b>Anxiety</b>	0.84 [0.77, 0.89]**	-1.42 [-2.24, -0.61]**	(-0.28)**
Males	0.86 [0.79, 0.91]**	-1.52 [-2.60, -0.44]**	(-0.28)**
Females	0.77 [0.62, 0.86]**	-0.93 [-2.30, 0.44]	(-0.17)
<b>Depression</b>	0.86 [0.80, 0.90]**	-1.13 [-1.71, -0.56]**	(-0.31)**
Males	0.85 [0.76, 0.91]**	-1.45 [-2.28, -0.61]**	(-0.35)**
Females	0.90 [0.83, 0.94]**	-0.64 [-1.32, 0.04]	(-0.24)
<b>PTSD</b>	0.83 [0.76, 0.87]**	-2.15 [-3.91, -0.40]*	(-0.19)*
Males	0.85 [0.77, 0.90]**	-2.54 [-4.87, -0.22]*	(-0.21)*
Females	0.77 [0.62, 0.86]**	-0.95 [-3.54, 1.64]	(-0.09)

*Note.* ICC = Interclass Correlation Coefficient; \*  $p < 0.01$ ; \*\*  $p < 0.05$

### Anxiety and Depressive Symptoms

Parent and child reports of overall anxiety and depressive symptoms demonstrated strong agreement (ICC = 0.87), with higher concordance observed for depressive symptoms (ICC = 0.86) than anxiety symptoms (ICC = 0.84). Agreement on overall anxiety and depressive symptoms was

stronger between parents and female children compared to male children (see Table 4). Mean difference scores were statistically significant ( $p < 0.001$ ) and negative for total anxiety and depressive symptoms, as well as for the anxiety and depression subscales, indicating that children reported experiencing more symptoms than their parents reported them to have. Significantly larger mean differences were observed between parents and male children compared to female children across total scores and subscales ( $p < 0.001$ ), indicating that male children reported more symptoms than their parents perceived.

#### *PTSD Symptoms*

Parent and child reports of overall PTSD symptoms demonstrated strong agreement (ICC = 0.83), with stronger concordance observed between parents and male children compared to female children (Table 4). Mean difference scores were statistically significant ( $p = 0.017$ ) and negative for PTSD symptoms, indicating that children reported experiencing more symptoms than their parents reported them to have ( $d = -0.19$ ). Significantly larger mean differences were observed between parents and male children compared to female children across total scores ( $p = 0.017$ ), indicating that male children reported more symptoms than their parents perceived.

#### **Factors Associated with Parent-Child Concordance**

Spearman correlations revealed significant positive associations between higher child-reported distress and greater parent-child discrepancies in PTSD symptoms ( $r_s = 0.47$ ,  $p < 0.001$ ). These findings indicate that children experiencing higher levels of distress tend to report more discordant experiences than their parents in this domain. Additionally, Spearman correlations showed significant positive associations between higher parent distress and discrepancies in child depressive symptoms ( $r_s = 0.21$ ,  $p < 0.05$ ) and child PTSD symptoms ( $r_s = 0.31$ ,  $p < 0.001$ ). These results indicate that parents experiencing higher levels of distress are more likely to report experiences that differ from their children's reports in these specific domains.

#### **Impact of Parent Perceptions of the Child's Experience on Child Mental Health**

##### *Child Anxiety Symptoms*

Child illness perception was significantly associated with child anxiety ( $\beta = 0.34$ ,  $p < 0.001$ ) and predicted 17.4% of the variance in child anxiety symptoms  $F(1, 155) = 32.76$ ,  $p < 0.001$ ,  $R^2 = 0.17$ . When adding parent illness perception and controlling for child illness perception ( $F(2, 154) = 19.52$ ,  $p < 0.001$ ,  $R^2 = 0.20$ ), the model showed significant improvement  $\Delta F(1, 154) = 5.35$ ,  $p = 0.022$ ,  $\Delta R^2 = 0.028$ . Parent illness perception was significantly associated with child anxiety ( $\beta = 0.19$ ,  $p = 0.022$ ). Overall, after controlling

for the child's illness perception, the inclusion of the parent's illness perception in the model accounted for a total of 2.8% of the variance in the child's anxiety symptoms (Table 5). This suggests that higher parental illness threat perceptions were associated with increased anxiety symptoms in children.

**Table 5.** Hierarchical Regression Analyses Examining the Role of Parent-Reported Illness Perception on Child Psychosocial Health After Controlling for Child-Reported Illness Perception.

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	$\Delta R^2$	Change Statistics			p
					$\Delta F$	df1	df2	
<b>Child Anxiety</b>								
1. Child Illness Perception	0.418	0.174	0.169	0.174	32.76	1	155	< 0001
2. Parent Illness Perception	0.450	0.202	0.192	0.028	5.35	1	154	0022
<b>Child Depression</b>								
1. Child Illness Perception	0.374	0.140	0.134	0.140	25.21	1	155	< 0001
2. Parent Illness Perception	0.433	0.187	0.177	0.047	8.99	1	154	0003
<b>Child PTSD</b>								
1. Child Illness Perception	0.365	0.133	0.128	0.133	23.80	1	155	< 0001
2. Parent Illness Perception	0.401	0.161	0.150	0.028	5.11	1	154	0.025

#### *Child Depressive Symptoms*

Child illness perception was significantly associated with child depression ( $\beta = 0.27, p = 0.001$ ) and predicted 14.0% of the variance in child depression symptoms  $F(1, 155) = 25.21, p < 0.001, R^2 = 0.14$ . When adding parent illness perception and controlling for child illness perception ( $F(2, 154) = 17.75, p < 0.001, R^2 = 0.19$ ), the model showed significant improvement  $\Delta F(1, 154) = 8.99, p = 0.003, \Delta R^2 = 0.047$ . Parent illness perception was significantly associated with child depression ( $\beta = 0.24, p = 0.003$ ). Overall, after controlling for the child's illness perception, the inclusion of the parent's illness perception in the model accounted for a total of 4.7% of the variance in the child's depression symptoms (Table 5). This suggests that higher parental illness threat perceptions were associated with increased depression symptoms in children.

#### *Child PTSD Symptoms*

Child illness perception was significantly associated with child PTSD ( $\beta = 0.28, p < 0.001$ ) and predicted 13.0% of the variance in child PTSD symptoms  $F(1, 155) = 23.80, p < 0.001, R^2 = 0.13$ . When adding parent illness perception and controlling for child illness perception ( $F(2, 154) = 14.77, p < 0.001, R^2 = 0.16$ ), the model showed significant improvement  $\Delta F(1, 154) = 5.11, p = 0.025, \Delta R^2 = 0.028$ . Parent illness perception was significantly associated with child PTSD ( $\beta = 0.19, p = 0.025$ ). Overall, after controlling for the child's illness perception, the inclusion of the parent's illness perception in the model accounted for a total of 2.8% of the variance in the child's PTSD symptoms (Table 5). This suggests that higher parental illness threat perceptions were associated with increased PTSD symptoms in children.

## DISCUSSION

Accurate assessment of child mental health relies on gathering both parent and child reports, a method widely regarded as the gold standard in pediatric research and clinical practice [1]. Yet, discrepancies between these perspectives are common, particularly in the evaluation of internalizing symptoms such as anxiety, depression, and trauma-related distress [43]. The degree of agreement between parent and child holds important clinical relevance, as greater alignment is often associated with more effective identification of psychological needs and better treatment outcomes [12,44], highlighting the relevance of examining the concordance between parent and child perceptions, especially in the context of potentially traumatic medical experiences that may involve pain, feelings of helplessness, and perceived threats to the child's life. By focusing on children who have undergone surgery, this study expands on prior research into parent-child agreement in the context of trauma [6,45]. The present study examined parent-child concordance in reports of psychological functioning following surgical procedures in children aged 7 to 17 years. The sample of primarily female parent participants (70%) warrants careful consideration of the interpretation of concordance results. For example, psychosocial factors such as differing responsibilities between female and male caregivers throughout the surgical procedure process and the degree of burnout experienced by the caregiver may influence experiences impacting parent-child alignment.

### Mental Health Experiences

The findings of this study provide important insights into how parents and children perceive internalizing symptoms following surgery, particularly in relation to anxiety, depression, and PTSD. Overall, agreement between parent and child reports was relatively high, particularly for depressive symptoms, which may appear at odds with earlier studies showing lower concordance on internalizing issues [6,45]. However, the context of pediatric surgery may explain the conflicting results. Specifically, parents are likely to have a more active role throughout the child's medical experience and, therefore, may be more observant and engaged, allowing them to detect emotional or behavioral changes that might otherwise go unnoticed in a more general context. The increased proximity and involvement may also facilitate parents' understanding of their child's internal state, leading to greater accuracy in their reports of symptoms such as depression and anxiety.

However, despite greater overall concordance, children consistently reported more symptoms than their parents perceived, as reflected in larger mean score differences, which underscore persistent perceptual gaps. Specifically, results showed an underestimation of child-reported anxiety, depression, and PTSD symptoms by parents. These findings suggest that even with increased agreement, parents may still overlook the

full extent of their child's emotional distress, which has also been observed in prior research on parent-child reporting of psychosocial symptoms following mild traumatic brain injury [45]. Children may experience significant psychological distress that remains less visible to caregivers, particularly in the aftermath of medical trauma, where emotional responses are internal and may not manifest behaviorally. This aligns with prior literature suggesting that parents are less accurate in identifying internalized distress and may rely on behavioral cues that are not always present [8].

Interestingly, discrepancies were more pronounced among male children, who reported higher levels of internalizing symptoms than their parents recognized. These findings challenge common assumptions that girls are more prone to internalizing distress and may reflect parental underreporting of emotional symptoms in boys due to norms around emotional expression [46]. Alternatively, boys may have fewer emotional outlets and thus report more symptoms when given the opportunity, while parents may overlook or minimize these signs. These potential explanations have important implications for assessment, suggesting that particular attention should be paid to boys' self-reports, even when parents do not identify a concern.

While the overall degree of agreement was strong for child PTSD symptoms, the differences in mean scores remained significant, particularly among male participants. Given the subtle and individualized nature of trauma symptoms, these results suggest that children may experience considerable distress that is not readily apparent to caregivers, which is consistent with previous research demonstrating that parents underestimate PTSD symptoms [7]. This reinforces the importance of using multi-informant approaches in trauma assessments and interventions, particularly in medical settings where trauma responses may be complex and evolving.

Taken together, these findings emphasize that while parents can provide valuable insights into their child's emotional state, they may underestimate the psychological toll that surgery and medical trauma have on their child, especially in boys. This underscores the need to routinely use validated self-report measures alongside parent-report tools when assessing post-surgical emotional outcomes. Moreover, interventions should consider engaging both children and parents in psychoeducation to bridge perceptual gaps and promote shared understanding of emotional responses to illness and recovery. These results not only support the use of dual-informant assessment models but also call for increased sensitivity to gender-related factors that influence how internalizing symptoms are recognized, reported, and responded to within families.

### **Factors Associated with Parent-Child Concordance**

Discrepancies between parent and child reports appeared to be shaped by a mix of emotional factors. Contrary to expectations, higher levels of child-reported distress were associated with greater discrepancies in PTSD symptoms. This suggests that the more distressed children are, the less likely parents are to recognize the full extent of their struggles. One possible explanation for this finding is that distressed children may withhold or mask their symptoms in interactions with their parents to protect them from additional worry. Another possible explanation may be due to the child's difficulties in verbalizing their emotional state. Alternatively, parents themselves may minimize signs of distress, particularly when dealing with the emotional burden of their child's medical crisis. These dynamics challenge the assumption that higher distress would lead to increased parental attentiveness or better concordance in reporting symptoms.

Elevated parental distress was also linked to greater disagreement with children's reports, particularly in the domains of depressive and PTSD symptoms. This increased discordance may indicate that distressed parents project their own emotional state onto their perception of the child's condition. Alternatively, parents who are emotionally overwhelmed may be less perceptive of their child's emotional needs and therefore fail to recognize their child's unique experience. These findings are consistent with existing literature that caregiver mental health can distort their interpretation of their child's experiences, especially when evaluating internalizing symptoms in their children [47]. Taken together, these findings further highlight the need for a multidimensional approach to assessment in pediatric settings that incorporates both parent and child perspectives while also considering the broader emotional context of each informant. As increased emotional burden in either informant may indicate a higher risk for under- or overreporting symptoms, screening for distress in both parents and children is critical.

### **Impact of Parent Perceptions of the Child's Experience on Child Mental Health**

Parental perceptions were demonstrated to play a crucial role in shaping children's psychological responses following surgery or illness. Specifically, when parents perceived their child's perception of their condition as highly threatening, children were more likely to report elevated levels of anxiety and depression even when the child's own perception of threat was less severe. While parental perceptions impact both anxiety and depression, the effect was more pronounced for depression, which may be due to depressive symptoms being more closely linked to emotional withdrawal. In contrast, anxiety symptoms may stem more directly from a child's internal evaluations of uncertainty or fear, making them potentially more independent of parental influence. These

findings emphasize the need to consider the parent-child relationship in pediatric mental health interventions. Parents who interpret their child's illness through a highly threatening lens may unintentionally model distress or communicate heightened concern, potentially exacerbating the child's emotional responses. This pattern aligns with prior literature on parental influence in medical trauma, which has shown that parental anxiety and cognitive appraisals can significantly shape a child's coping and adjustment [48,49]. However, the finding that parental threat perception remains a significant predictor even after accounting for the child's own perceptions emphasizes that interventions focused solely on the child may overlook key sources of distress in the broader family context. Thus, a more holistic approach that includes psychoeducation for parents and fosters open communication between parents and children is needed. Such strategies can help align illness perceptions and reduce psychological burden on children recovering from surgery or illness. Addressing both the cognitive and emotional responses of parents could serve as an incentive to promote improved mental health outcomes for pediatric patients [50].

Parent illness perception demonstrated a critical and independent role in shaping children's post-surgical trauma responses, particularly in relation to child PTSD symptoms. The significant positive association between parental threat perception and child-reported PTSD symptoms after controlling for the child's own illness perception highlights the unique influence that parents' cognitive and emotional responses have on their child's psychological adjustment. These findings correspond to those demonstrated in previous works examining the effects of parental beliefs on PTSD symptoms in their child after surgery [51]. When parents view their child's perception of their illness as highly threatening, it may unintentionally heighten the child's own distress through behavioral cues or overprotectiveness, even if the child does not subjectively perceive the situation as threatening. However, it is essential to recognize that parental illness perception is only one contributing factor. A child's PTSD symptoms are also influenced by factors such as prior adverse experiences, established coping strategies, and the quality of family communication [50]. While addressing parental beliefs is a valuable intervention point, supporting a child's psychological recovery requires comprehensive approaches that consider both individual and family factors.

## CONCLUSIONS

### Limitations and Future Directions

This study offers several key strengths that enhance its contribution to the literature on parent-child concordance, specifically related to pediatric psychological outcomes following surgery. The utilization of a multi-informant design that includes both parent and child report data is a well-established practice in pediatric psychological assessment [1] and allows

for a more comprehensive understanding of children's post-surgical experiences, especially given the known discrepancies between parent and child perspectives on internalizing symptoms such as anxiety, depression, and trauma [45]. While this study provides valuable insights into parent-child concordance and its relationship to child psychological functioning following surgery, several limitations warrant consideration. The lack of differentiation between types of surgery and specific health conditions limits the ability to determine whether certain procedures are more strongly associated with perceptual discrepancies or distress. This is an important consideration as different surgical procedures (i.e., organ transplant, bone fracture repairs, adenoidectomy) vary in invasiveness and recovery demands, which pose different issues for families. Furthermore, children may mask symptoms contributing to parental misperceptions. The lack of controlling for such factors within the regression models may limit the interpretation of findings between parent-child perceptions and mental health outcomes following the child's surgery. Additionally, challenges arise in integrating multi-informant data, as there is no standardized approach for interpreting discordant parent and child reports [52], potentially affecting reliability and generalizability.

Moreover, the study did not account for parenting style, the child's perception of parental behavior, or parent-child attachment patterns which may significantly influence how distress is expressed, perceived, and reported within families. The cross-sectional design further restricts causal interpretations of the relationships among parent perceptions, concordance, and child mental health, emphasizing the need for longitudinal research to track these dynamics over time. Additionally, the predominance of White, non-Hispanic, and female parent participants limits the generalizability of findings to more diverse populations and to fathers. Despite these limitations, the study establishes a foundation for future research to examine how specific surgical contexts, parenting dynamics, parent-child attachment, the child's ability to control or mask their symptoms and standardized multi-informant assessment methods contribute to understanding parent-child concordance and its implications for pediatric psychological health.

### **Implications**

The findings of this study highlight several key implications for clinical practice. First, the variability in concordance across domains suggests the importance of using a multidimensional assessment approach that considers both parent and child perspectives. In particular, mental health assessments should incorporate both objective observations of emotional symptoms and subjective reports to capture a more holistic understanding of the child's experience. Secondly, psychoeducational programs for both parents and children could help bridge perceptual gaps and ensure a shared understanding of the child's emotional needs and coping strategies.

Finally, supporting parents in managing their own distress could improve their ability to perceive and respond to their child's needs more effectively and, in so doing, potentially reduce the child's mental health symptoms. In conclusion, this study advocates for a family approach to pediatric care that recognizes the interconnectedness of parent and child perspectives in shaping the child's psychological recovery following surgery.

## **ETHICAL STATEMENT**

### **Ethics Approval**

The study was approved by the Institutional Review Board of the University of South Dakota (22-292 on 2023 Feb 14). Informed consent, including consent for their child to participate in the study, was obtained for all parents involved in the study. Additionally, informed assent was obtained from all children involved in the study.

### **Declaration of Helsinki STROBE Reporting Guideline**

This study adhered to the Helsinki Declaration. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guideline was followed.

## **DATA AVAILABILITY**

The data supporting this study's findings are available upon reasonable request from the author BAD.

## **AUTHOR CONTRIBUTIONS**

Conceptualization, formal analysis and investigation, writing: JLT; methodology, reviewing, and editing: JLT and BAD.

## **CONFLICTS OF INTEREST**

These authors declare no competing interests.

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