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## Parent-Child Agreement on Family Accommodation Differentially Predicts Outcomes of Child-Based and Parent-Based Child Anxiety Treatment

Sigal Zilcha-Mano<sup>a</sup>, Yaara Shimshoni<sup>b</sup>, Wendy K. Silverman<sup>b</sup>, and Eli R. Lebowitz<sup>b</sup>

<sup>a</sup>Department of Psychology, University of Haifa; <sup>b</sup>Child Study Center, School of Medicine, Yale University, Child Study Center, School of Medicine

### ABSTRACT

**Objectives:** Family accommodation is linked to poor treatment outcomes for childhood anxiety. Progress in research on the role of accommodation in treatment has been hindered by the relatively weak association between child and parent reports on accommodation. In this study, we suggest that parent-child agreement on family accommodation may provide a dependable estimation of this construct, and investigated whether the level of parent-child agreement on family accommodation predicts subsequent treatment outcome. We further examined whether the effect was greater in Supportive Parenting for Anxious Childhood Emotions (SPACE), which directly targets family accommodation, than in individual child-focused cognitive behavioral therapy (CBT).

**Methods:** Participants were 104 children (aged 6–15) with anxiety disorders, and their mothers, randomized to SPACE or CBT. Accommodation was rated by mothers and children before treatment, halfway through treatment, and at treatment end, using respective versions of Family Accommodation Scale–Anxiety. To accurately estimate agreement, we conducted multilevel response surface analysis by polynomial regression, with agreement on accommodation at each time point predicting subsequent child anxiety severity, over the course of treatment.

**Results:** Parent-child agreement and disagreement on accommodation were significant predictors of subsequent anxiety symptom severity. Different results were obtained for SPACE and CBT, suggesting potentially distinct underlying mechanisms.

**Conclusions:** The findings suggest treatment-specific roles of accommodation in SPACE vs. CBT. Multiple-informant assessment of accommodation provides important information, which may have important implications for optimal treatment personalization.

Family accommodation refers to changes in behaviors and routines intended to help a relative dealing with a psychiatric disorder avoid or alleviate distress related to the disorder. Family accommodation is almost ubiquitous in childhood anxiety disorders, with estimates as high as 95% to 100% of parents reporting frequent accommodation of their child's symptoms (E. R. Lebowitz et al., 2016; E. R. Lebowitz, Scharfstein et al., 2014; E. R. Lebowitz et al., 2013; Storch et al., 2015; Thompson-Hollands et al., 2014). Common examples of accommodation include allowing co-sleeping when the child is afraid to sleep alone, speaking in place of a child who is anxious in social situations, and providing repeated reassurance when a child is worried (E. R. Lebowitz et al., 2016). Although family accommodation is motivated by efforts to reduce the child's anxiety and distress in the short term, over time it is expected to fuel a negative cycle that maintains and even increases the child's anxiety, hampers the development of independent

coping skills (Jones et al., 2015; E. R. Lebowitz et al., 2013; Storch et al., 2015), adversely affects the parents' quality of life (E. R. Lebowitz et al., 2016), and hinders therapeutic change (Kagan et al., 2016).

Reducing family accommodation is increasingly recognized as an important treatment goal in anxiety and obsessive-compulsive disorder (OCD). It has been studied both as the focus of treatment and as a component incorporated in individual cognitive behavioral therapy (CBT), group CBT, or family-based CBT (Shimshoni et al., 2019). Some findings suggest that adjunct sessions focusing in part on the reduction of family accommodation may improve parent-rated treatment outcomes of CBT for anxiety disorders (Thompson-Hollands et al., 2015; Wood et al., 2006). This promising evidence joins recent findings demonstrating that SPACE (Supportive Parenting for Anxious Childhood Emotions), the treatment protocol

**CONTACT** Sigal Zilcha-Mano  sigalzil@gmail.com  Department of Psychology, University of Haifa, Mount Carmel, Haifa 31905, Israel

Zilcha-Mano Sigal, The Department of Psychology, University of Haifa, Israel; Shimshoni Yaara, Yale University, Child Study Center, School of Medicine USA; Silverman K Wendy, Yale University, Child Study Center, School of Medicine USA; Lebowitz, Eli Yale University, Child Study Center, School of Medicine USA.

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that directly targets reduction in accommodation as an entirely parent-based treatment, was efficacious and not inferior to CBT for child anxiety disorders, based on child-rated and parent-rated outcomes, as well as on clinician ratings (E. R. Lebowitz et al., *in press*).

Although there are promising findings to support the importance of family accommodation, much still awaits exploration. Many of the randomized studies conducted to examine parents' involvement in treatment for anxiety disorders have failed to find that involving parents in treatment enhances child anxiety outcomes (Breinholst et al., 2012; Reynolds et al., 2012; Silverman et al., 2008). Systematic investigation of reduction of accommodation as an active treatment procedure remains scarce. It has been argued that such investigation could profit from the evaluation of family accommodation as a multiple-informant construct that captures its complexity (E. R. Lebowitz et al., *in press*). It has been suggested that, especially when there is no clear gold standard for measuring a given construct, parent-child agreement should be taken into account when assessing the construct of interest (De Los Reyes & Kazdin, 2005). Underlying this recommendation is the acknowledgment that no one informant holds all the truth about a given construct and that parent-child agreement or disagreement may be related to critical facets of the parent, child, or family functioning. The importance of integrating a multi-informant perspective is further supported by the relatively low association between parent and child ratings of family accommodation, which is consistent with the commonly documented discrepancies between child and parent reports of other related constructs (Achenbach, 2006; Affrunti & Woodruff-Borden, 2015; De Los Reyes, 2011; De Los Reyes et al., 2015; Mash & Hunsley, 2005), such as the child's problems that may require treatment (Hawley & Weisz, 2003; Yeh & Weisz, 2001). Parents and children may have different motivations and different thresholds or perceptions of what constitutes accommodation behavior for a given child.

As has been argued in relation to other constructs (Achenbach, 2006; De Los Reyes & Kazdin, 2005), taking into account both parents' and children's perspectives on family accommodation may prove pivotal in understanding the process of therapeutic change, especially in treatments that focus on accommodation reduction (E. R. Lebowitz et al., *in press*). Reports from multiple informants' can be instrumental in capturing contextual variations in children's mental health concerns (De Los Reyes et al., 2015). For instance, parents and children may vary in their perspectives as to how much accommodation is provided by the family. Based on the

accumulating literature (De Los Reyes & Kazdin, 2005), it can be suggested that parents and children may attribute their own behavior and the behavior of the other to different causes, may have different biases in recalling accommodation events, and may be affected by differential heuristic processes. Parents and children may also differ in their awareness or perception of the accommodation. For example, if children do not understand some of their own experiences as symptoms of anxiety, they are not likely to identify parental responses to these experiences as accommodations of anxiety. A child may also find some parental behaviors unhelpful and therefore not consider them accommodations. Finally, a child may be unaware of some accommodations that parents are making, as in the case of accommodation for anxiety during the night, when the child is sleepy (E. R. Lebowitz et al., 2020), or accommodation performed when the child is at school or elsewhere. According to the generalizability theory (Cronbach et al., 1963; Shavelson & Webb, 1991), taking into account the perspectives of distinct informants on a construct, who represent relevant source of variability, can be instrumental in building a more dependable assessment of the construct (Hoyt & Melby, 1999). Thus, we propose that focusing on parent-child agreement, rather than addressing it from a single perspective, can yield a more dependable assessment of accommodation.

In the last two decades, the operationalization of agreement has undergone an important methodological development, motivated by the strong criticism voiced against the use of differences scores and profile similarity correlations. Some of the disadvantages of using differences scores have to do with their low reliability and the ambiguity inherent in profile similarity indices that combine data from different informants into a single score, while ignoring absolute scores (Edwards, 2001; Edwards & Parry, 1993; Shanock et al., 2010). The new method suggested was polynomial regression and response surface analysis (Shanock et al., 2010). The main advantage of polynomial regression and response surface analysis is that it retains information about the absolute level of the construct of interest, as rated by the two informants, and about the direction of the differences between them. This enables researchers to distinguish between instances in which the two informants *agree* on the levels of the construct under investigation, and those when they *disagree*, and to inquire into the sources of such disagreement, without impairing the reliability of the construct. In recent years, this method has been implemented in investigating active ingredients in effective treatments (Marmarosh & Kivlighan, 2012; Zilcha-Mano et al., 2017), and the potential differential effects of active

ingredients in distinct treatments (Zilcha-Mano et al., 2019). In the field of child and adolescent psychiatry and psychology, it has been suggested that because of mathematical constraints, researchers should avoid using difference scores to measure informant discrepancies, and rather, use polynomial regression analyses, which provide a more comprehensive and accurate assessment of informant discrepancies (Laird & De Los Reyes, 2013). In Becker-Haimes et al. (2018), for example, polynomial regression was successfully used to study parent-youth disagreement on youth symptomatology, and demonstrated the merits of increasing agreement between parents and youths on the latter's symptom severity over the course of treatment.

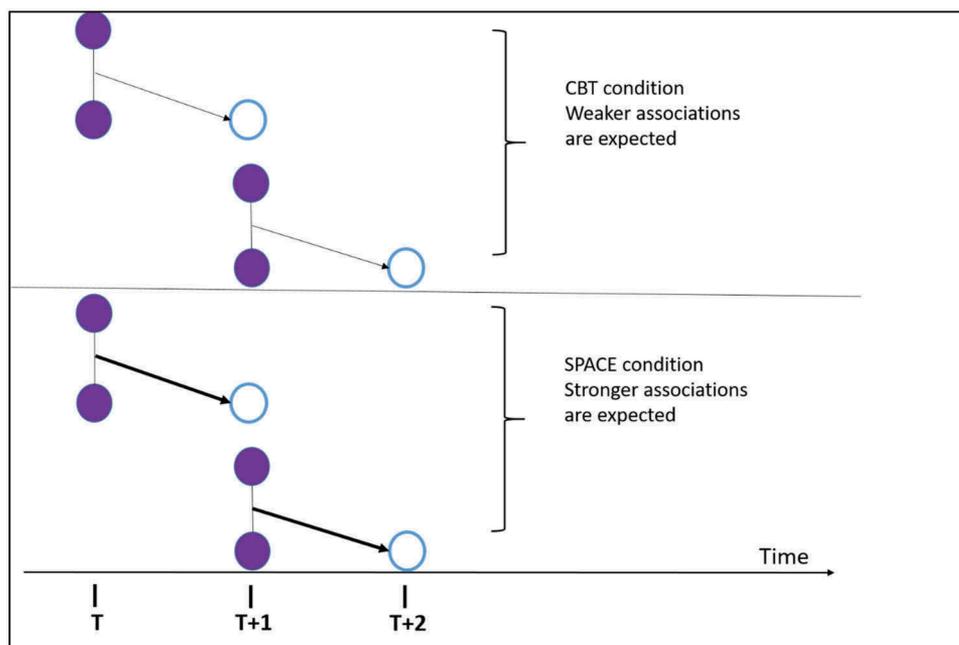
Using polynomial regression and response surface analysis, in the present study, we examined whether agreement between parents and children on family accommodation levels predicted subsequent child anxiety symptom severity in child-based (CBT) and parent-based (SPACE) child anxiety treatments. Given our interest in the convergence of parent and child reports on accommodation, we have focused our hypotheses only on parent-child agreement, rather than disagreement. We hypothesized that agreement between parents and children on family accommodation levels predicts subsequent child anxiety symptom severity in both SPACE and CBT. We further hypothesized that agreement on accommodation levels has a greater effect on

subsequent symptom severity in SPACE, where reducing accommodation is a primary treatment procedure. We first examined parent reported child anxiety symptoms assessed with the Screen for Child Anxiety Related Emotional Disorders (SCARED) because of its robust psychometric properties (Runyon et al., 2018; Van Meter et al., 2018), and because it has demonstrated superiority over other measures of children's anxiety symptoms (Caporino et al., 2017). We then repeated all analyses with the child version of the SCARED to check whether similar or divergent patterns of findings emerge. Establishing a correct temporal relationship between accommodation and symptom severity is critical for rigorous testing of our hypothesis, given the risk of reverse causation, where high levels of anxiety symptoms in the child may result in greater parent accommodation (Settipani & Kendall, 2017). Therefore, in all analyses, accommodation served as a predictor of subsequent anxiety symptom severity levels (see Figure 1).

## Method

### Participants

According to the inclusion criteria of the trial, only children with primary DSM-5 anxiety disorder diagnosis were eligible. One hundred and twenty-four mother-child dyads participated in the original randomized



**Figure 1.** The proposed conceptual model according to which child-parent agreement on accommodation at the previous time point (solid circles) predicts the child's subsequent anxiety symptom severity (empty circle). The thicker line in SPACE than in CBT represents our hypothesis that the effect of parent-child agreement on accommodation on subsequent anxiety symptoms is stronger in SPACE than in CBT.

controlled trial (RCT) and were randomized to one of two conditions: SPACE or CBT. Only dyads that had at least one measurement point in which both parent and child reported on the level of accommodation and the subsequent treatment outcome were included in the current analyses. Thus, the data of a total of 104 mother-child dyads were used. The study was approved by the institutional review board of the relevant institution. In the current subsample of the trial (84% of the total clinical trial's sample), children's mean age was 9.6 (range 6–15,  $SD = 2.45$ ), and 54% were female; they were predominantly white (84.5%) and non-Hispanic (89.4%) with a minority being black (5%) or of more than one race/ethnicity (9.7%). The primary anxiety diagnoses were generalized anxiety disorder (30.8%), social phobia (33.7%), separation anxiety disorder (21.2%), and specific phobia (11.5%).

### Treatments

Study participants were randomly assigned to one of two treatment models: SPACE and CBT. Both treatments were manualized and designed to treat patients in a fixed, 12-session, one-session-per-week format. In the SPACE condition ( $N = 52$ ), parents received 12 parent-only sessions, following the manualized SPACE treatment protocol (Lebowitz & Omer, 2013; E. R. Lebowitz, Omer et al., 2014), with no direct child-therapist contact. Parents' accommodations were carefully and comprehensively mapped out, and target accommodations were selected for modification. A detailed plan for changes to the accommodation was constructed and implemented. In the CBT condition ( $N = 52$ ), children received 12 sessions of exposure-based CBT, following an established manualized treatment protocol used in previous child anxiety trials (Silverman et al., 2009). Mothers of children assigned to CBT received no parent-treatment sessions. Mothers met with the child's therapist at the start, middle, and end of treatment, for approximately 20 minutes each time, to provide information about the child's therapy and to inform exposure hierarchies, but therapists were trained not to provide parental guidance or to suggest modifications to parental behavior. Therapists were crossed across treatment arms to reduce therapist variance. Primary and secondary outcomes from the trial have been previously reported ([REMOVED FOR MASKED REVIEW]). In brief, SPACE was found to be noninferior to CBT across all outcome measures assessed, attrition did not differ significantly between groups, and treatment credibility was high for both treatments.

## Measures

### Family Accommodation

The Family Accommodation Scale–Anxiety is the most widely used instrument for assessing family accommodation in child anxiety disorders, with established psychometric properties including internal consistency and test-retest reliability. Parallel parent (FASA; E. R. Lebowitz et al., 2013) and child (FASA-CR; E. R. Lebowitz et al., 2015) versions were administered, and used in all analyses. A total accommodation score was calculated from nine items that rate frequency of accommodations on a 5-point scale. The items refer to active participation in symptoms and to modification of family routines and schedules, a factorial structure that has been supported through both exploratory and confirmatory factor analyses. Internal consistency was excellent for FASA ( $\alpha = .90$ ) and good for FASA-CR ( $\alpha = .80$ ).

### Symptom Severity

The Screen for Childhood Anxiety Related Emotional Disorders (SCARED) is a widely used 41-item rating scale of childhood anxiety symptoms with good psychometric properties including internal consistency and reliability (Birmaher et al., 1997). Parallel parent and child versions were administered. Internal consistency was excellent ( $\alpha = .89$  and  $\alpha = .91$  for the parent and the child versions, respectively).

### Procedure

After describing the study to the parents and children, parents' written informed consent and children's written assent were obtained. Mothers, who were the identified participating parents, had to be present in all SPACE sessions, and completed all parent evaluations and assessments. Fathers could choose to attend SPACE sessions, and were present in 12% of sessions, attending at least once in 25% of cases. Parents and children completed the accommodation measure before starting treatment, at mid-treatment (following the sixth session), and post-treatment (following the 12th and final session). The SCARED was completed at the same time points. Further details about the design and procedures used are described elsewhere ([REMOVED FOR MASKED REVIEW]).

### Data Analysis

The data were hierarchically nested, with observations nested within parent–child dyads. To account for the resulting non-independence of assessments, and to prevent inflation of the effects, we added the dyad as a random effect to the analyses, using the lme

procedure for mixed model modeling from the nlme package of the R software (Pinheiro et al., 2012). To examine the effects of agreement between parents' and children's report on level of accommodation, we conducted a multilevel model response surface analysis by polynomial regression. Based on Shanock et al.'s (2010) recommendations, the following predictors were used: (a) parent accommodation rating, (b) child accommodation rating, (c) quadratic term formed by squaring the parent accommodation rating, (d) quadratic term formed by squaring the child accommodation rating, and (e) a cross-product term formed by multiplying the parent accommodation rating by the child accommodation rating. We also controlled for the effect of time in the model. To establish a temporal relationship between the predictors and outcome, we used the predictors at time T-1 to predict outcome at time T, over the course of treatment. Namely, T1 was used to predict T2, and T2 was used to predict T3 (see Figure 1). Before constructing the quadratic and cross-product terms, parents' and children's accommodation ratings were standardized.

Following Edwards and Parry (1993) and Edwards (2001), the following regression equation was used:

$$\text{SCARED} = b_0 + b_1\text{PA} + b_2\text{CA} + b_3\text{PA}^2 + b_4\text{PA} \times \text{TA} \\ + b_5\text{CA}^2 + b_6\text{time} + e$$

where PA represents parent accommodation and CA child accommodation.

We used the estimated coefficients from the regression model to calculate test values for two slopes and two curvatures along the response surface: (a) the slope of the line of agreement (if  $a_1 > 0$ , symptoms are less severe when parent and child agree on a low level of accommodation than when they agree on a high level of accommodation;  $a_1 = b_1 + b_2$ ); (b) the curvature along the line of agreement (if  $a_2 > 0$ , symptoms are less severe when parent and child agree on intermediate levels of accommodation than when they agree on a high or low levels of accommodation;  $a_2 = b_3 + b_4 + b_5$ ); (c) the slope of the line of disagreement (if  $a_3 > 0$ , symptoms are less severe when parent perception of accommodation is lower than child perception of accommodation than when child perception of accommodation is lower than parent perception, given that their sum is constant);  $a_3 = b_1 - b_2$ ); and (d) the curvature along the line of disagreement (if  $a_4 > 0$ , symptoms are less severe when disagreement between parent and child ratings of accommodation is lower;  $a_4 = b_3 - b_4 + b_5$ ). For more information on the equations, see Edwards and Parry (1993) and Edwards (2001). To examine whether treatment arm may serve as a moderator of the effect of accommodation agreement on subsequent

child symptom severity, we introduced the effect of treatment arm into the model as an interaction between treatment arm and each of the two slopes and two curvatures along the response surface. If significant differences were found between arms, we plotted the surface analysis for each treatment condition to shed light on the nature of the differences. The following equation was used:

$$\text{SCARED} = b_0 + b_1\text{PA} + b_2\text{CA} + b_3\text{PA}^2 + b_4\text{PA} \times \text{TA} \\ + b_5\text{CA}^2 + b_6\text{Tx} + b_7\text{PA} \times \text{Tx} + b_8\text{CA} \times \text{Tx} \\ + b_9\text{PA}^2 \times \text{Tx} + b_{10}\text{PA} \times \text{TA} \times \text{Tx} + b_{11}\text{CA}^2 \\ \times \text{Tx} + b_{12}\text{time} + e$$

where PA represents parent accommodation, CA child accommodation, and Tx treatment arm. We performed all analyses twice, once for the parent version of the SCARED and once for the child version.

## Results

### Preliminary Results

The included ( $N = 104$ ) and excluded ( $N = 20$ ) subsample did not significantly differ in any of the following baseline variables: child age ( $t_{(121)} = 0.42, p = .66$ ), parent-reported accommodation ( $t_{(121)} = 1.73, p = .09$ ), child-reported accommodation ( $t_{(121)} = -0.82, p = .41$ ), parent-reported anxiety symptom severity ( $t_{(121)} = 0.74, p = .45$ ), child-reported anxiety symptom severity ( $t_{(121)} = 1.12, p = .26$ ), or child gender ( $\chi^2_{(1)} = .12, p = .72$ ). Within the included subsample, for parent-reported accommodation, the percentages of full observation were 99%, 99%, and 91.34% for the first, second, and third time point, respectively. For child-reported accommodation, the percentages of full observation were 100%, 98%, and 90.38% for the first, second, and third time point, respectively. These percentages indicate few missing data by psychotherapy research standards. Little's test was not significant ( $\chi^2_{(23)} = .1540, p = .87$ ), suggesting that observations were missing completely at random.

Means and standard deviations for parent-reported and child-reported levels of accommodation and anxiety symptom severity at each of the three time points across treatment appear in Table 1. The correlations between parents' and children's reports on accommodation were non-significant at any of the three time points:  $r = .09$  ( $p = .32$ ),  $r = .15$  ( $p = .13$ ), and  $r = .15$  ( $p = .12$ ), for baseline, mid-treatment, and end of treatment, respectively. A repeated measure analysis indicated that parent-rated ( $F_{(2,182)} = 58.40, p < .0001$ ) and child-rated ( $F_{(2,180)} = 51.14, p < .0001$ ) accommodation was reduced significantly over the course of treatment. At baseline, the correlation between parent-reported anxiety severity (the SCARED score, as reported by the parents), and children-

**Table 1.** Means and standard deviations for parent-reported and child-reported level of accommodation and anxiety (rated using the SCARED measure) at each of the three time points.

Informant	Time point	Number of observations	Mean	Standard deviation
Parent-reported accommodation	1	103	15.22	8.10
	2	103	12.93	8.61
	3	95	8.05	6.41
Child-reported accommodation	1	104	13.40	6.61
	2	102	8.51	7.05
	3	94	6.81	5.38
Parent-reported child-anxiety	1	104	31.14	11.30
	2	102	28	11.85
	3	95	19.69	13.24
Child-reported child-anxiety	1	104	32.08	14.91
	2	103	27.06	14.92
	3	95	20.75	13.94

and parent-reported accommodation was  $r = .08$  ( $p = .38$ ) and  $r = .42$  ( $p < .0001$ ), respectively. For child-reported anxiety severity (the SCARED score, as reported by the child), the correlations with children- and parent-reported accommodation were  $r = .19$  ( $p = .04$ ) and  $r = .20$  ( $p = .03$ ), respectively.

In this subsample of the trial, the children assigned to the CBT condition were older ( $10.08 \pm 2.54$  vs.  $9.12 \pm 2.29$  for the CBT vs. SPACE,  $t_{(101)} = -2.02$ ,  $p = .046$ ), and had a lower chance of being male (33.3% vs. 57.7% for CBT vs. SPACE;  $\chi^2_{(1)} = .013$ ,  $p = .018$ ). Parents tended to report higher levels of accommodation for younger children ( $r = -0.2$ ,  $p = .03$ ). There was no significant correlation between child-reported accommodation and age ( $r = -0.9$ ,  $p = .36$ ). There were no significant differences between male and female children in parent-reported accommodation ( $14.99 \pm 8.59$  vs.  $15.39 \pm 7.82$  for male vs. female,  $t_{(100)} = -.25$ ,  $p = .79$ ) or in child-reported accommodation ( $13.55 \pm 6.39$  vs.  $13.16 \pm 6.84$  for male vs. female,  $t_{(101)} = .29$ ,  $p = .76$ ). The interaction between child age and gender was not a significant predictor of parent-reported accommodation ( $\beta = -.06$ ,  $p = .50$ ). The interaction between child age, and gender, however, was a significant predictor of child-reported accommodation ( $\beta = .22$ ,  $p = .02$ ). The significant interaction suggests a significant association for males between age and accommodation, with younger age being associated with greater

accommodation ( $p = .01$ ), but for females no significant association was found between age and accommodation ( $p = .37$ ).

### Parent-Child Agreement on Accommodation as a Predictor of Subsequent Parent-reported Symptom Severity in the Whole Sample

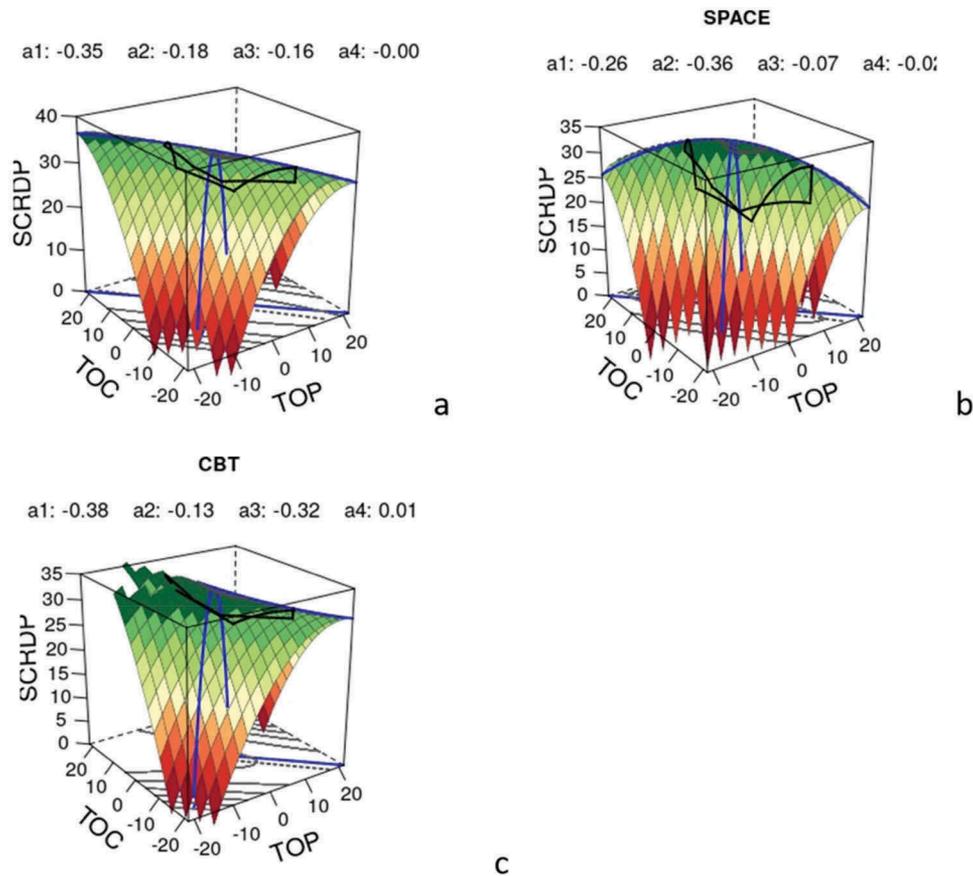
To examine the effects of parent and child agreement or disagreement on accommodation levels on parent-reported subsequent anxiety symptom severity, we used response surface analysis and examined the linear combinations of effects. The model with parent- and child-rated accommodation accounted for 34.4% of the variance in child anxiety symptom severity rating by parents at the subsequent time point.

As can be seen in Table 2, findings were significant for the line of agreement but not for the line of disagreement. Specifically, we found a significant curvature along the line of agreement ( $a_{\text{curvilinear}} = -0.17$ ,  $p = .01$ ). This suggests that parent-child agreement on either high or low levels of accommodation was associated with less severe child symptoms at the subsequent time point than was parent-child agreement on moderate levels of accommodation. In Figure 2a, the x-axis represents parent-rated accommodation, the y-axis child-rated accommodation, and the z-axis the expected value of subsequent parent-reported child anxiety symptom severity according to the model. The line of agreement of parent and child accommodation ratings (where parent's accommodation rating = child's accommodation rating) extends from the closest to the farthest corners of the plane. The slope of the response surface along the line of agreement shows the effect of agreement at high and low levels of parent and child accommodation. The significant curvature along the line of agreement ( $a_{\text{curvilinear}} = -0.17$ ,  $p = .01$ ), combined with Figure 2a, shows that on average parent-reported symptom severity is lower when parent and child ratings of accommodation are either high or low, compared to when they are moderate. In other words, agreement on higher or lower levels of accommodation predicted lower parent-reported child

**Table 2.** Response surfaces for parent and child accommodation and parent-rated subsequent severity of symptoms in SPACE vs. CBT.

Effect	Entire sample		SPACE		CBT		Differences	
	Coefficient	$p$	Coefficient	$p$	Coefficient	$p$	Coefficient	$p$
Slope along $x = y$	-0.35	.08	-0.25	.37	-0.38	.14	-0.13	0.37
Curvature along $x = y$	-0.17	.01	-0.36	.02	-0.12	.15	-0.24	0.04
Slope along $x = -y$	-0.16	.43	-0.07	.78	-0.32	.28	0.25	0.73
Curvature along $x = -y$	-0.003	.88	-0.02	.50	0.005	.84	0.015	0.64

Notes. Slope along  $x = y$  refers to the slope of the line of agreement. Curvature along  $x = y$  refers to the curvature along the line of agreement. Slope along  $x = -y$  refers to the slope of the line of disagreement. Curvature along  $x = -y$  refers to the curvature along the line of disagreement. The coefficients are computed based on the multilevel response surface analysis by polynomial regression models. For more details, see Nestler et al. (2019).



**Figure 2.** Agreement between parent and child reports of accommodation and subsequent symptom severity of the child. X-axis = parent accommodation rating; Y-axis = child accommodation rating; Z-axis = subsequent symptom severity of the child. Panel 2a shows a combined figure of the two conditions. Panel 2b shows the SPACE condition. Panel 2c shows the CBT condition.

symptom severity at the subsequent time point, than did agreement on a moderate level of accommodation.

Regarding the line of disagreement (along which parent and child accommodation ratings are opposite: parent accommodation rating = - child accommodation rating), both the slope and curvature were insignificant ( $a_3 = -0.16, p = .43$ ) ( $a_4 = -0.003, p = .88$ ). These findings lend no support to either the ability of accommodation disagreement or its direction to predict subsequent symptom severity.

#### **Differential Effect of Parent-Child Agreement on Accommodation on Subsequent Parent-reported Symptom Severity in SPACE vs. CBT**

We examined treatment condition as a moderator of the effect of accommodation agreement on subsequent parent-reported treatment outcome. To assess the differential effects of treatment arm on the ability of parent-child accommodation agreement to predict subsequent treatment outcome, we added interaction effects with treatment arm to all the terms of the

original model, which enabled us to derive a separate response surface for each treatment arm, and to test the differences between them. We found a significant difference between treatment arms in the curvature along the line of agreement,  $a_{\text{curvilinear}} = -0.36$  vs.  $a_{\text{curvilinear}} = -0.12$ , for SPACE and CBT, respectively ( $p = .04$ ). To shed light on this significant difference, we continued to assess the effects of parent and child accommodation agreement in each treatment arm. As shown in Table 2, in the SPACE condition, there was a significant curvature along the line of agreement. In Figure 2b, the x-axis represents parent-rated accommodation, the y-axis child-rated accommodation, and the z-axis the expected value of child's subsequent symptoms severity according to model. In the SPACE condition, the significant curvature along the line of agreement, combined with Figure 2b, shows that when parent and child agree on either higher or lower levels of accommodation, subsequent parent-reported symptoms are less severe than when they agree on a moderate level of accommodation. The effect of parent and child agreement was not significant in the CBT condition (Figure 2b vs. 2c). The findings

remained the same after controlling for age and gender and their interaction, with a significant effect for parent-child agreement in SPACE ( $p = .03$ ), but not in CBT ( $p = .11$ ).

### Parent-Child Agreement on Accommodation as a Predictor of Subsequent Child-reported Symptom Severity in the Whole Sample

The model with parent- and child-rated accommodation accounted for 21.4% of the variance in child anxiety symptom severity rating by the child at the subsequent time point. As can be seen in Table 3, findings were significant for the line of agreement but not for the line of disagreement. We found a significant curvature along the line of agreement ( $a_{\text{curvilinear}} = -0.23, p = .01$ ). This suggests that parent-child agreement on either high or low levels of accommodation was associated with less severe child's symptoms at the subsequent time point, than was parent-child agreement on a moderate level of accommodation. The significant curvature along the line of agreement ( $a_{\text{curvilinear}} = -0.23, p = .01$ ), combined with Figure 3a, shows that on average child-reported symptom severity is lower when parent and child ratings of accommodation are either high or low, compared to when they are moderate. In other words, agreement on higher or lower levels of accommodation predicted lower child-reported symptom severity at the subsequent time point, than did agreement on a moderate level of accommodation. Regarding the line of disagreement, both the slope and curvature were insignificant ( $a_3 = -0.06, p = .81$ ) ( $a_4 = 0.002, p = .93$ ). These findings lend no support to the ability of accommodation disagreement to predict subsequent child-reported symptom severity.

### Differential Effect of Parent-Child Agreement on Accommodation on Subsequent Child-reported Symptom Severity in SPACE vs. CBT

No significant differences were found between treatment arms. As an exploratory analysis, we continued to assess the significant level of the effects of parent and child accommodation agreement and disagreement in each treatment arm. As shown in Table 3, in the CBT

condition, there was a significant curvature along the line of agreement ( $a_{\text{curvilinear}} = -0.33, p = .02$ ) as well as a significant negative slope along the line of disagreement ( $a_{\text{linear}} = -1.68, p = .02$ ). In Figure 3b, the x-axis represents parent-rated accommodation, the y-axis child-rated accommodation, and the z-axis the expected value of the child's subsequent symptom severity according to the model. In the CBT condition, the significant negative slope along the line of disagreement, together with Figure 3b, shows that, in addition to the findings in the whole sample, on average subsequent child-reported symptom severity is lower when the child reports higher levels of accommodation than does the parent. The effect of parent and child agreement was significant in CBT but not in SPACE (Figure 3b vs. 3c). The findings remained the same after controlling for age, gender, and their interaction, with no significant differences between treatment arms, and a significant effect for parent-child agreement ( $p = .004$ ) and disagreement ( $p = .045$ ) in CBT, but not in SPACE ( $p = .11$ ).

### Post Hoc Analysis of the Potential Moderating Effect of Time

We conducted a *post hoc* analysis to test whether the reported effects of parent-child agreement and disagreement on outcome vary in time. We compared the fit of the model of interest with the model that assumes the moderating effect of time (session), on all model parameters. For both parent-reported and child-reported symptom severity, the delta BIC between the models suggested a better model fit for the initial models, without the moderating effect of time.

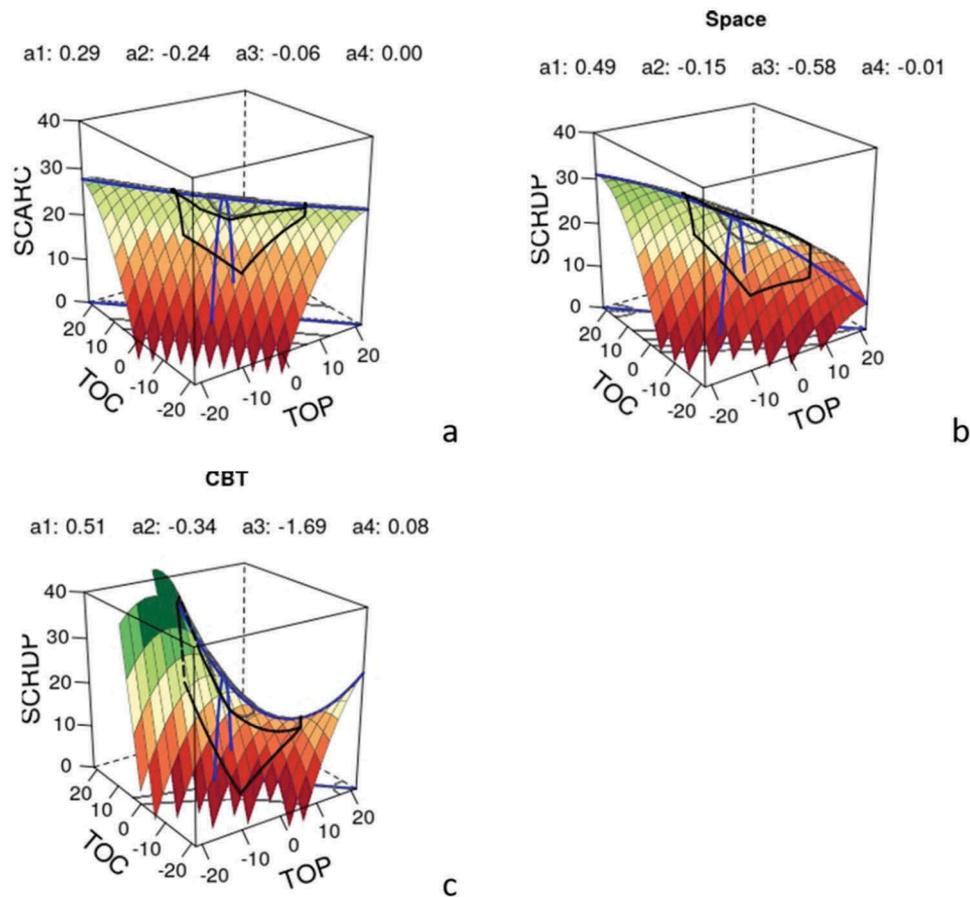
### Discussion

The current findings support the important role of accommodation in the treatment of children with anxiety disorders, suggesting that parent-child agreement and disagreement on accommodation predicted subsequent symptom reduction. Although accommodation was found to be important in both treatments, distinct patterns were evident for SPACE vs. CBT, potentially

**Table 3.** Response surfaces for parent and child accommodation and child-rated subsequent severity of symptoms in SPACE vs. CBT.

Effect	Entire sample		SPACE		CBT		Differences	
	Coefficient	<i>p</i>	Coefficient	<i>p</i>	Coefficient	<i>p</i>	Coefficient	<i>p</i>
Slope along $x = y$	0.29	.25	0.48	.41	0.51	.35	-0.02	.98
Curvature along $x = y$	-0.23	.01	-0.15	.41	-0.33	.02	0.18	.45
Slope along $x = -y$	-0.06	.81	-0.58	.40	-1.68	.02	1.10	.25
Curvature along $x = -y$	0.002	.93	-0.01	.87	0.08	.16	-0.09	.28

Notes. Slope along  $x = y$  refers to the slope of the line of agreement. Curvature along  $x = y$  refers to the curvature along the line of agreement. Slope along  $x = -y$  refers to the slope of the line of disagreement. Curvature along  $x = -y$  refers to the curvature along the line of disagreement. The coefficients are computed based on multilevel response surface analysis by polynomial regression models. For more details, see Nestler et al. (2019).



**Figure 3.** Disagreement between parent and child reports of accommodation and subsequent symptom severity of the child, as reported by the child. X-axis = parent accommodation rating; Y-axis = child accommodation rating; Z-axis = subsequent symptom severity of the child. Panel 3a shows a combined figure of the two conditions. Panel 3c shows the CBT condition. Panel 3b shows the Space condition.

suggesting distinct roles of accommodations in each treatment. For SPACE, which is a parent-based treatment, the significant effect of parent-child agreement on accommodation was specific to parent-reported symptom severity, whereas for CBT, which is a child-focused treatment, the significant effect of accommodation was specific to child-reported symptom severity. The findings stress the importance of adopting a multiple-informant perspective of the construct of accommodation. Whereas previous studies reveal that the accommodation ratings of children with anxiety disorders and their parents are only weakly or moderately correlated, the current findings demonstrate the important knowledge gained by a dependable assessment of accommodation, based on parent-child agreement and disagreement.

Overall across both informants, the results support the main hypothesis that parent-child agreement is a significant predictor of anxiety treatment response. For parent-reported symptom severity, the findings were

consistent with our hypotheses regarding the importance of parent-child agreement on accommodation in predicting treatment success, especially in SPACE. Specifically, the findings suggest that agreement on either very high or very low levels of accommodation predicts less severe subsequent parent-reported symptoms than agreement on a moderate level of accommodation. This pattern of association between informants' agreement on an active ingredient of treatment and subsequent treatment outcome has been previously documented in the literature (Zilcha-Mano et al., 2019). Similarly to Zilcha-Mano et al. (2019), it can be suggested that agreement on low levels of accommodation may signify an adaptive process that is expected to be associated with lower symptom severity. Agreement on high levels of accommodation may underscore the importance of parents' active collaboration in a treatment focused on reducing accommodation. In SPACE, agreement on high levels of accommodation may serve as an unambiguous sign that parents need to make significant changes to their current routines, which

can then lead to reduction in the child's anxiety symptoms. Thus, both parent-child agreement on very high and on very low levels of accommodation may be associated with less severe subsequent parent-reported symptoms. By contrast, parent-child agreement on moderate levels of accommodation may not provide a sufficiently compelling signal for parents to meaningfully change their existing routines.

The current findings based on parent-reported child symptom severity build on and extend previous research documenting the important role of accommodation in the treatment of children with anxiety disorders (E. R. Lebowitz et al., 2016). The specificity of the current findings to SPACE vs. CBT may be instrumental in understanding the mixed results in previous studies regarding the role of parent involvement in treatment success. Whereas some of the studies in the literature support the importance of family accommodation, others have failed to find that involving parents in treatment reduces the children's anxiety outcomes (Breinholt et al., 2012; Reynolds et al., 2012; Silverman et al., 2008). The current findings based on parent-reported symptom severity demonstrate the potential role that reduction in accommodation may play in outcome. The findings also suggest that this potential role is realized only when therapists implement techniques directly targeting accommodation.

For child-reported symptom severity, we found that consistent with our hypothesis, agreement between parents and children on family accommodation levels predicted subsequent child anxiety symptom severity in both SPACE and CBT. Although no significant differences were found between SPACE and CBT for child-reported symptom severity, an exploratory analysis yielded a distinct pattern of results, not compatible with our *a priori* hypotheses. Specifically, the findings suggest that when children reported higher accommodation than their parents did, subsequent child-reported symptom severity was lower than when parents reported higher levels of accommodation than did their children. This effect was specific to CBT. These findings should be interpreted with cautious because no significant differences were found between CBT and SPACE for child-reported symptom severity, and this effect was the product of an exploratory analysis. If these findings are replicated in future studies, several potential explanations may be suggested for the different patterns of results for SPACE vs. CBT. One potential *post hoc* explanation for the findings is that the divergent results based on parent- and child-reported symptom severity may suggest that the current findings are less robust and therefore require

further validation in future studies. While future validation is needed, an alternative *post hoc* explanation is that the different findings capture distinct pieces of information concerning the role of accommodation reduction in anxiety treatment and that focusing on the perspectives of different informants can reveal distinct mechanisms of change underlying SPACE and CBT. For parent-reported anxiety symptoms, the significant effects were of parent-child agreement on accommodation in the parent-based treatment (SPACE). By contrast, for child-reported anxiety symptoms, the significant effects were of parent-child disagreement on accommodation in the child-based treatment (CBT). In the case of SPACE, which is a parent-based treatment focused on accommodation reduction, the role of accommodation may rely on parent-child agreement, reflecting the extent to which both suffer from the current situation and may feel the need to make a change. In the case of CBT, the importance of the construct of accommodation for treatment success may rather rely on the children's relative level of awareness of the degree of accommodation they receive from the family. Specifically, in CBT, when children reported higher levels of accommodation than did their parents, they also reported lower subsequent symptom severity than when parents reported higher levels of accommodation. A child reporting more accommodation than their parent may signal a higher level of the child's readiness for treatment when starting the CBT child-focused treatment, as well as a lower level of parent awareness, suggesting that greater responsibility for change is placed on the child, were such change to occur. This may serve as a good prognosis in child-focused treatment. A third *post hoc* explanation also focuses on individual difference between children, which may affect treatment success. According to this explanation, when children show a relatively higher awareness than their parents to the family repertoire of accommodations, the child may choose to focus on reducing such tendencies while actively participating in the tasks of treatment. For example, the child may treat it as a potential exposure task in the exposure hierarchies, or as a potential out-of-session task, and may pay greater attention to it in the daily diaries.

According to the last two *post hoc* explanations, the uniqueness of the findings based on each informant's outcome in each treatment is not merely noise but may reveal important information about potential differences between the two treatments. This may be consistent with an approach stressing the importance of capturing contextual variations in children's mental health concerns

and treatment (De Los Reyes et al., 2015). For clinics providing distinct types of treatments, the findings may serve to inform personalized treatment assignment to replace the one-treatment-fits-all treatment assignment, or treatment assignment that is not evidence-informed. Although more direct investigation is needed to support/inform such concrete guidelines, findings may suggest that when children report higher levels of accommodation at baseline than their parents do, the clinician may consider providing CBT, but less so when parents report higher levels of accommodation at baseline. By contrast, when parents and children agree on very high or very low levels of accommodation, the clinician may consider SPACE, but less so when they agree on moderate levels of accommodation. Note that such potential *post hoc* implications should await the accumulation of additional research supporting the current findings.

Several limitations should be taken into account when evaluating the current findings. First, data included only three-time points, the last one being at the end of active treatment. More frequent ratings of accommodation, including over a follow-up period, could shed light on the timeframe in which changes in accommodation occur, and may affect subsequent treatment outcome. Second, although the sample size was relatively large compared to previous studies on this subject, it may still have limited our ability to identify small effects. A third limitation of the current work is that repeated assessments of external observer evaluation of anxiety symptoms were not collected. External observer evaluation makes possible rigorous testing of the effect of parent-child reports on treatment outcome while avoiding criterion contamination when examining whether multi-informant reports are predictive of treatment outcome. In this way, a criterion variable can be used that is entirely independent of individual informant reports (see Garb, 2003). Teacher reports may serve similar purposes. Teachers may be able to evaluate the child outside the context of family accommodation, and may have the opportunity to calibrate their report based on normative classroom behavior. A multi-informant approach to assessment may be instrumental in capturing contextual variations in the expression of children's mental health problems, and it may be important for both future research and clinical practice (De Los Reyes et al., 2015). Future research should make use of the literature on the differences between various approaches to measuring child symptomatology (parent-report, child-report, teacher-report, external observer report) to formulate *a priori* hypotheses about the effects of child-parent agreement on accommodation on subsequent symptomatic levels, and test these hypotheses systematically.

Similarly, future studies could use coding of accommodation by an external observer in addition to parent and child ratings. By considering reports from informants who interact and evaluate the child in different circumstances, it is possible to gain a better understanding of the degree of consistency with which the children display concerns in different situations. Fourth, whereas the current study used response surface analysis by polynomial regression to test the effects of parent-child agreement on accommodation, other valuable statistical methods can be the focus of future research on accommodation to complement the current findings, such as latent class analysis for revealing patterns of agreement (Makol et al., 2019). Finally, it is not possible to determine causality unequivocally, despite the fact that we used rigorous design and statistical analyses, including the establishment of a correct temporal relationship between the predictor (agreement on accommodation) and outcome (subsequent reduction in symptoms), and that individuals were randomized to treatments with vs. without a focus on accommodation reduction.

Notwithstanding these limitations, the findings suggest that a dependable multiple-informant perspective of family accommodation, measured as the agreement between the perspectives of the child and the parent, is an important construct to consider in the treatment of childhood anxiety disorders. Findings demonstrate the differential effect of agreement on accommodation in SPACE, which focuses explicitly on reducing family accommodation, vs. CBT. Finally, a potential reverse causation is inherent in interpretations of any study on accommodation: whereas lower levels of accommodation may result in less severe symptoms because of the adverse effects of parents' accommodation, the opposite can also be true: when the child suffers from less severe symptoms, less family accommodation is needed (Settipani & Kendall, 2017). Hence, the importance of the present findings that accommodation is the predictor of subsequent symptom reduction, rather than being merely a product of symptom severity.

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