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Family Accommodation of Pediatric Irritability: Development and Psychometric Properties of the Family Accommodation Scale for Irritability

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Highlights

- Introduces the Family Accommodation Scale for Irritability (FASI)
- Parent- and child-report scales show good convergent and discriminant validity
- Confirmatory factor analyses support a two-factor model
- The FASI is a useful tool for assessing family accommodation of youth irritability

Abstract

Irritability in children and adolescents is an important mental health concern that presents across a range of disorders. Family accommodation refers to the way families alter their behavior to prevent or reduce child distress. Despite its clinical relevance, the role of family accommodation in pediatric irritability remains underexplored. This study developed and validated a novel parent- and child-report form of the Family Accommodation Scale for Irritability (FASI). We recruited 131 youths (61.83% male, 36.64% female, 1.53% unknown sex; 63.36% White, 12.21% Multiracial, 9.92% Black or African American, 3.05% American Indian/Alaska Native, 2.29% Asian, 9.16% unknown race) aged 8–17 years ($M=12.23$, $SD=2.49$) with varying irritability symptom severity. Both parents and their children completed the FASI and measures of child irritability, anxiety, and depression. Irritability was also assessed by clinician-report. Confirmatory factor analyses (CFA) were used to test factor structures. Internal consistency, convergent and divergent validity, and cross-informant agreement on the FASI were also assessed. CFA supported a two-factor model of family accommodation, representing “Participation in behaviors” and “Modification of family routines.” Internal consistency, convergent and divergent validity supported the reliability and validity of the scale. Child age showed a significant negative correlation with parent-reported, but not child-reported, family accommodation. Accommodation did not vary with child sex. These results show that family accommodation of irritability can be reliably and validly assessed using the parent- and child-reported FASI scales. Future studies may use this measure to advance understanding of the role that family accommodation plays in pediatric irritability, and its potential as an intervention target.

Keywords: irritability, family accommodation, psychometrics, validity, reliability

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Introduction

Over the past decade, there has been increasing recognition of irritability as a common, impairing, and transdiagnostic symptom, particularly in child and adolescent populations. Irritability has been described as a proneness to anger that may reach an impairing extent (Leibenluft et al., 2024), with increased frustration and low frustration tolerance being its central markers (Alam et al., 2023; Tseng et al., 2023). Irritability is the primary symptom of disruptive mood dysregulation disorder (DMDD; American Psychiatric Association, 2013) and presents as a symptom of other internalizing and externalizing disorders, including anxiety, depression, oppositional defiant disorder (ODD), attention deficit hyperactivity disorder (ADHD), and autism spectrum disorder (ASD) (Eyre et al., 2017; Mikita et al., 2015; Savage et al., 2015; Stringaris & Goodman, 2009). Despite the prevalence of irritability and its association with negative long-term emotional and functional outcomes (Leibenluft et al., 2006; Stringaris et al., 2009), interventions to treat irritability remain understudied (Leibenluft et al., 2024). Emerging evidence suggests that family accommodation—where caregivers modify family routines or engage with their child’s behaviors in ways that aim to avoid or alleviate the child’s distress—is commonly observed across pediatric psychiatric disorders and may serve to maintain symptoms over time (Shimshoni et al., 2019). However, no validated measures currently exist to assess family accommodation specific to irritability, limiting efforts to identify these patterns and target them in treatment.

Family accommodation behaviors typically involve parent participation in the child’s symptom-driven behaviors (e.g., providing excessive reassurance) and modification of family routines (e.g., staying home from work; Lebowitz et al., 2016). Family accommodation has been most extensively studied in obsessive-compulsive disorder (OCD) and anxiety disorders (Lebowitz et al., 2016; Storch et al., 2007), where high levels of accommodation are associated with increased child symptom severity (Lebowitz et al., 2013a; Strauss et al., 2015; van Groot Battavé et al., 2025; Wu et al., 2016). The *Family Accommodation Scale* (FAS; Calvocoressi et al., 1999) and *Family Accommodation Scale-Anxiety* (FASA; Lebowitz et al., 2013a) have been developed to measure accommodation of OCD and anxiety symptoms, respectively. Parents of children with OCD or anxiety report similarly high levels of family accommodation and experience similar negative consequences when not accommodating their child’s symptoms (Lebowitz et al., 2014). Notably, accommodation is also tied to treatment outcomes. Merlo and colleagues (2009) evaluated cognitive-behavioral therapy (CBT) for pediatric OCD and found that decreases in family accommodation from pre- to post-treatment were associated with improved pediatric treatment outcomes (Merlo et al., 2009). In another study, Garcia et al. (2010) found that lower pre-treatment levels of family accommodation predicted greater symptom improvement over the course of CBT, medication, or combined (CBT + medication) treatment (Garcia et al., 2010). Family accommodation also mediates the association between youth irritability symptoms and youth anxiety treatment outcomes (Cabrera et al., 2023). Finally, parent-based interventions developed to reduce family accommodation have shown success in decreasing children’s anxiety and OCD symptoms (Dekel et al., 2021; Lebowitz et al., 2019). Together, these studies point to accommodation as a key construct in the management and treatment of pediatric OCD and anxiety disorders.

In contrast to existing evidence associating family accommodation behaviors with OCD and anxiety disorders (Kagan et al., 2017), there is scant understanding of how this construct is

involved in pediatric irritability. Just as caregivers may adapt their behaviors to avoid triggering a child's OCD or anxiety symptoms, families may alter their routines or concede to a child's demands to avoid irritable and angry outbursts; a concept proposed earlier by Patterson in his seminal work on pediatric externalizing behavior problems (Patterson, 1982; Snyder & Patterson, 1995). While family accommodations provide short-term relief, they typically perpetuate children's maladaptive irritable behaviors, hindering development of effective emotion regulation and coping skills (Kagan et al., 2017).

Prior work shows that child and adolescent irritability levels are positively correlated with family accommodation of OCD symptoms (Guzick et al., 2021). Youth irritability is also associated with family accommodation of anxiety symptoms (Freitag et al., 2024), and parents of anxious irritable youth demonstrate more accommodation of anxiety symptoms compared to parents of anxious non-irritable youth (Budagzad-Jacobson et al., 2024). These findings suggest that irritability amplifies the extent to which parents engage in accommodation behaviors. Indeed, in youth with OCD, greater family accommodation is linked with coercive-disruptive behaviors, i.e., behaviors through which children impose rules, prohibitions, and symptom accommodation on family members (Lebowitz et al., 2015; van Groot Battavé et al., 2025). These behaviors are highly correlated with symptoms of ODD—a diagnosis where irritability is a hallmark symptom—and often involve physical aggression or verbal abuse when such demands from the child are resisted (Lebowitz et al., 2015; van Groot Battavé et al., 2025). These findings illustrate how irritability-related behaviors may reinforce the cycle of accommodation and symptom severity. While studies have linked irritability and coercive-disruptive behaviors to the accommodation of OCD and anxiety symptoms, and our clinical observations suggest that parents accommodate children's irritability, family accommodation of *irritability-specific* symptoms has not been directly measured due to lack of an appropriate measure. This is a critical oversight because the behaviors and emotional dynamics that drive accommodation in the context of irritability may differ from those in OCD and anxiety. Without a validated measure to assess accommodation specific to irritability, researchers and clinicians lack the tools needed to understand how accommodation may contribute to the persistence and exacerbation of irritability symptoms.

This underdevelopment is a serious gap in knowledge given that pediatric irritability is associated with several negative long-term outcomes, including mental health disorder onset (Leibenluft et al., 2006), suicidal behaviors (Benarous et al., 2019; Orri et al., 2018), and lower educational attainment (Stringaris et al., 2009). Irritable children show increased risk of experiencing school suspensions and using specialty mental health services and school-based services (Copeland et al., 2015). Pediatric irritability also presents a challenge for families; it places a high burden on parents and is associated with conflict and poorer communication in families (Copeland et al., 2015; Zendarski et al., 2023). These negative outcomes have been observed in both community and clinical samples, underscoring the need to study both populations to capture the spectrum of irritability-related impairment. Studying the role that family accommodation plays in pediatric irritability across clinical and non-clinical populations will inform the potential of family accommodation as an intervention target. Crucially, doing so requires the development of a validated measure to assess accommodation of irritability.

In the present study, we address this knowledge gap by reporting on our development of the Family Accommodation Scale for Irritability (FASI) and its psychometric properties. Our

newly developed FASI contains 13-item parent-report and 16-item child-report versions. This scale was adapted from the Family Accommodation Scale – Anxiety (FASA; Lebowitz et al., 2013), which itself was modified from the earlier Family Accommodation Scale for Obsessive-Compulsive Disorder (FAS; Calvocoressi et al., 1999). The underlying structure of the FASA is well-suited to capturing family responses to child irritability (i.e., participating in behaviors and modifying routines to prevent or manage outbursts), though we adapted the specific item content to reflect symptoms unique to irritability. For example, the FASA item “How often did you provide items needed because of anxiety?” was modified in the FASI to “How often did you give your child things because they were angry/irritable?”. Through building on the established framework of the FASA, we ensure that the FASI captures similar accommodation dynamics while addressing the specific behaviors and challenges posed by irritability. Given the two-factor structure found in the FASA, representing Participation in symptom-related behaviors and Modification of family life, we expect a similar factor structure with the FASI. Family accommodation likely serves a similar function across pediatric disorders (i.e., reducing short-term child distress) where parents behave by participating in the child’s symptom-related behaviors and/or modifying their own behaviors. Thus, we examined the factor structure of the FASI with confirmatory factor analysis. We also expected FASI scores to show satisfactory internal consistency and convergent validity assessed through correlations with irritability scores. By testing for discriminant validity against anxiety and depression symptoms, we expect that the FASI will specifically capture accommodation behaviors related to irritability, rather than general accommodation tendencies that apply across mental health disorders. We hypothesized that parent- and child-reported FASI would demonstrate low to moderate cross-informant correspondence, based on typical levels of parent-child agreement for mental health measures (Bajeux et al., 2018). Finally, we tested whether child age and sex were associated with family accommodation scores. We hypothesized that accommodation scores would be negatively correlated with child age and would not differ by sex, as has been found with the FASA (Lebowitz et al., 2020).

Methods

Participants

Participants were recruited from two separate research centers in the United States to include children and adolescents (i.e., youth) with a wide range of irritability levels. One center recruited a community sample of 80 children; the other recruited a clinical sample of 51 children with ADHD (51%), DMDD (20%), or clinically impairing irritability, i.e., sub-threshold DMDD (29%). Most participants in the community sample (63%) did not meet criteria for any diagnosis. Among those who did, the most common diagnoses were ADHD (19.5%), ODD (19.5%), and generalized anxiety disorder (9.8%).

The final sample for the present study consisted of 131 youths aged 8–17 years ($M = 12.23$ yrs, $SD = 2.49$). We included participants from both the community and clinic to maximize sample size and to evaluate the generalizability of the FASI across samples with diverse clinical characteristics, including diagnostic profiles, treatment status, and treatment history. The distributions of irritability scores were similar across community and clinic participants (see Supplementary Material); thus, samples were combined for analysis. Parents provided consent and youth provided assent for study participation. All study procedures were

approved by the institutional review boards at Yale (HIC2000025557) and the National Institute of Mental Health (02-M-0021). Diagnoses in both community and clinical samples were assessed by clinicians using the Kiddie Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime version (K-SADS-PL; Kaufman et al., 1997). IQ was assessed using the two-subtest version of the Wechsler Abbreviated Scale of Intelligence (WASI; Wechsler, 1999). Exclusionary criteria were the following: IQ < 70; diagnosis of posttraumatic stress disorder, schizophrenia, neurological disorder or head trauma, pervasive developmental disorder, bipolar disorder, or OCD; current major depressive episode; substance abuse within 3 months of participation; current/past major medical illnesses; suicidal ideation. These criteria were selected because current data were drawn from larger studies on neural mechanisms of irritability for which the sampling strategies were to minimize confounds in fMRI and to exclude conditions with MRI contraindications and where irritability may have distinct etiological pathways.

Of the 131 youths, 81 were males, 48 were females, and 2 were of unknown sex; 63.36% were White or Caucasian, 12.21% were of more than one race, 9.92% were Black or African American, 3.05% were American Indian/Alaska Native, 2.29% were Asian, and 9.16% were designated as unknown race. In terms of parental levels of education, 29.01% of children had a parent with some high school education, 12.98% had a parent with some college education, and 36.64% had a parent with a graduate school degree. The median household income was > \$100,000. Full participant characteristics are presented in the Supplementary Material (see Table S1).

Measures

Family Accommodation of Irritability. The Family Accommodation Scale for Irritability – Parent Report (FASI-P) consists of 13 items. Items were developed to closely match those of the FASA (Lebowitz et al., 2013), with references to anxiety replaced with “anger/irritability.” Items were also adapted to reflect accommodating behaviors, when a child is angry/irritable, that are commonly reported by parents to clinicians. Likert scale labels were the same as those used in the parent-reported FASA. The first 9 items, rated on a 5-point scale from “Never” to “Daily” (0–4), assess the frequency of accommodation behaviors and are summed to compute the total score. The total score thus ranges from 0 to 36. The last 4 items are rated on a 5-point scale from “No” to “Extreme” (0–4), and are not used to compute the total score. One item assesses parental distress associated with accommodation, and 3 items assess the child’s responses to not being accommodated (i.e., child becomes distressed, angry/irritable or has worsening irritability).

The Family Accommodation Scale for Irritability – Child Report (FASI-C) consists of 16 items. These items were similarly developed to closely align with items in the FASA, with references to anxiety replaced with “mad/angry/annoyed” or “anger/mood,” and to include reference to behaviors commonly reported by parents. Likert scale labels mirror those used in the child-reported FASA. The first 9 items are rated on a 5-point scale from “Very Rarely” to “Very Often” (0–4) and are summed for the total score. The remaining 7 items are rated on a 5-point scale from “Strongly Disagree” to “Strongly Agree” (0–4). One item assesses parental distress, 3 items assess the child’s response to not being accommodated, and 3 items assess the child’s

beliefs about accommodation (i.e., belief about feeling mad/angry/annoyed in response to parental accommodation). Scale items for both the parent and child versions are available in the Supplementary Material (see Tables S2–3).

Irritability. The Affective Reactivity Index (ARI) has a parent- (ARI-P) and child-report (ARI-C) version. Both consist of 6 items assessing child irritability symptoms over the past six months and one item assessing irritability-related impairment in functioning (Tables S4–5). Items are rated on a three-point scale from “Not true” to “Definitely true” (0–2). The total ARI score is the sum of the first six items, thus ranging from 0 to 12. The ARI has been validated in multiple clinical (Stringaris et al., 2012) and community (DeSousa et al., 2013; Mulraney et al., 2014; Stringaris et al., 2012) samples. The internal consistency for the present sample was good for both parent-report, Cronbach’s $\alpha = .90$, and child-report, $\alpha = .86$.

The Clinician Affective Reactivity Index (CL-ARI) is an 11-item scale administered by a trained clinician to assess irritability over the past week, based on semi-structured interviews with both the child and their parents (Table S6). There are three subscales measuring temper outbursts, irritable mood between outbursts, and impairment. Previous work has reported good reliability and validity of the CL-ARI (Haller et al., 2020), and this scale has been used as an outcome measure in treatment studies (Naim et al 2024). In our sample, internal consistency for this scale was good, $\alpha = .85$.

Anxiety. The Screen for Child Anxiety Related Emotional Disorders (SCARED; Birmaher et al., 1997) was used as an anxiety measure to assess discriminant validity of the FASI. The SCARED has both parent (SCARED-P) and child-report (SCARED-C) forms. Each consists of 41 items that assess the child’s anxiety symptoms over the past three months. Participants respond on a 3-point scale from “Not True or Hardly Ever True” to “Very True or Often True” (0–2). The scale shows good validity and reliability (Birmaher et al., 1997). Internal consistency in this sample was excellent for parent-reports, $\alpha = .91$, and child-reports, $\alpha = .94$.

Depression. Depression measures were included to assess discriminant validity of the FASI. In the sample recruited from the community ($n=51$), depression was measured using the Children’s Depression Inventory (CDI; Kovacs, 1978), a 27-item questionnaire completed by the child. Items were scored from 0 to 2 and summed for the total score. The CDI shows good psychometric properties (Smucker et al., 1986). Internal consistency in the current sample was excellent, $\alpha = .91$.

In the sample recruited from the clinic ($n=80$), the short-version Mood and Feelings Questionnaire (MFQ; Angold et al., 1995) was used. This measure has parent (MFQ-P) and child-report (MFQ-C) forms. The scale consists of 13 items assessing depressive symptoms over the past two weeks. Responses are rated on a 3-point scale from “Not true” to “True” (0–2), with total scores ranging from 0 to 26. The measure has demonstrated good psychometric properties

(Thabrew et al., 2018) and showed good internal consistency in this sample for parent-report, $\alpha = .87$, and child-reports, $\alpha = .90$.

Data Analysis

Missing Data. When a scale was partially completed, mean imputation was performed by replacing missing item scores with the participant's mean of the completed items from that scale. This accounted for $< 0.5\%$ of data for each variable, with a maximum of 3 items imputed for the SCARED scale and 1 item for all other scales.

Confirmatory Factor Analyses. We conducted confirmatory factor analyses (CFAs), using the *lavaan* package in R, to examine the factor structure of the FASI-P and FASI-C. For each informant, two different two-factor correlated models were tested for the FASI, based on prior factor structures of the FASA (Lebowitz et al., 2013c, 2020; van Groot Battavé et al., 2025). The first model included items 1–4 loading onto the Participation factor and items 5–9 loading onto the Modification factor. The second model included items 1–5 for Participation and items 6–9 for Modification. Diagonally weighted least squares estimation was used, as this method performs better for ordinal data (Mindrila, 2010). Confirmatory Fit Index (CFI) > 0.95 , Root Mean Square Error of Approximation (RMSEA) < 0.07 , and Standardized Root Mean Square Residual (SRMR) values < 0.08 indicate acceptable fit (Hooper et al., 2008).

Convergent and Discriminant Validity. Convergent validity was assessed by testing correlations between the FASI and irritability measures (i.e., ARI, CL-ARI). All variables of interest were not normally distributed ($ps \leq .004$; Supplementary Material), thus Spearman's correlation tests were used. Positive correlations support convergent validity, as greater irritability should be associated with more family accommodation. Discriminant validity was assessed by testing whether the FASI was empirically distinct from anxiety (i.e., SCARED) and from depression (using the MFQ in the clinic sample and the CDI in the community sample). Following guidelines from Rönkkö and Cho (2022), discriminant validity between the FASI and SCARED, and between the FASI and MFQ, was assessed by estimating CFA models that included each pair of scales. Analyses were conducted using the *lavaan* and *semTools* packages in R. Diagonally weighted least squares estimation was used. The standardized factor solutions were inspected, and 95% confidence intervals (CIs) of the estimated factor correlations were evaluated against a cutoff of .80 with likelihood ratio tests (Rönkkö & Cho, 2022). Correlations lower than this value indicate good discriminant validity. In the community sample, depression was assessed using the CDI, but the sample size ($n=41$) was too small for CFA-based comparisons. Therefore, discriminant validity for this measure was assessed by comparing the Spearman's correlation coefficients and their 95% confidence intervals for the FASI-ARI and FASI-CDI associations. As family accommodation of irritability ought to relate more strongly to the child's irritability symptoms than to their depression symptoms, we expected a lower correlation between the FASI and CDI.

Informant, Age, and Sex. Correlations were used to examine associations between FASI-P and FASI-C total and subscale scores as well as between FASI scores and child age. T-tests were conducted to examine sex differences and informant differences in FASI scores.

Results

Descriptive statistics of the measures are shown in Table 1. Irritability levels, measured by the ARI and CL-ARI, ranged from very low to severe (ARI-P: $M = 5.24$, $SD = 3.53$, range = 0–12; ARI-C: $M = 4.26$, $SD = 3.28$, range = 0–12; CL-ARI: $M = 27.32$, $SD = 16.96$, range = 0–66.02). Mean irritability scores in the total sample were higher than other published community samples (Mulraney et al., 2014) and comparable to other published clinical pediatric samples (Stringaris et al., 2012) in prior studies. Mean total family accommodation scores (FASI-P: $M = 11.53$, $SD = 8.78$, range = 0–36; FASI-C: $M = 9.11$, $SD = 5.83$, range = 0–29) were lower than anxiety accommodation levels for clinical pediatric samples with anxiety (Lebowitz et al., 2013; 2020). In the present study, the community-based sample had lower mean parent-reported family accommodation than the clinical sample, $t(95.35)$, $p = .011$. The samples did not differ on parent-reported irritability, child-reported irritability, or child-reported family accommodation ($ps > .173$). Full descriptive statistics for community and clinical samples are available in the Supplementary Material (Tables S7–S8).

Mean anxiety scores (SCARED-P: $M = 16.87$, $SD = 12.05$; SCARED-C: $M = 21.37$, $SD = 14.00$) were comparable to clinical anxiety samples (Birmaher et al., 1997). 23.9% of the sample had SCARED-P scores above the clinical cutoff of 25, and 32.4% of the sample had SCARED-C scores above this cutoff. There is no prescribed clinical cutoff score for the MFQ, though the mean MFQ score in the present sample (MFQ-P = 4.61, $SD = 4.33$; MFQ-C = 5.14, $SD = 5.29$) was slightly elevated compared to community samples of children without depression (Rhew et al., 2010). The mean CDI score ($M = 11.41$, $SD = 8.93$) was comparable to that of community samples in prior work (Saoji et al., 2019).

96.8% of parents and 95.5% of children endorsed some family accommodation behavior on the FASI (i.e., total score ≥ 1). 81.5% of parents reported at least mild distress because of engaging in these behaviors. The mean item-level scores were 1.36 for FASI-P and 1.28 for FASI-C on a scale from 0 to 4. Item 1, which asks how often the parent calms their child down because they were angry/irritable, had the highest mean score for the FASI-P ($M = 2.12$). Item 14, which asks whether the child feels less angry when the parent accommodates, had the highest mean score for the FASI-C ($M = 2.17$).

CFA Results

FASI-P. The first model fit the data very well, $RMSEA = .042$, $CFI = .999$, $SRMR = .040$. The second model also fit the data well, $RMSEA = .063$, $CFI = .999$, $SRMR = .043$.

FASI-C. The first model fit the data well, RMSEA = .000, CFI = 1.00, SRMR = .070. The second model also had a good fit, RMSEA = .039, CFI = .995, SRMR = .080.

Both models for the FASI-P and FASI-C fit the data well. Standardized factor loadings for the first model are shown in Table 2. Factor loadings for the second model are available in the Supplementary Material (see Table S9). All factor loadings were > 0.40 at p 's < 0.001 . As the models were not nested, we were not able to use chi-squared difference tests (Kline, 2023) or Δ CFI (Cheung & Rensvold, 2002) to compare models. We chose to use the factor structure from Model 1 for subsequent analyses, as this showed the highest CFI, lowest RMSEA, and lowest SRMR values compared to Model 2 (Hu & Bentler, 1999).

Internal Consistency

Internal consistency was excellent for the FASI-P, Cronbach's $\alpha = .94$. For the parent-report Participation and Modification subscales, Cronbach's $\alpha = .86$ and $.93$, respectively. Internal consistency was acceptable for the FASI-C, Cronbach's $\alpha = 0.78$. For the child-report Participation and Modification subscales, Cronbach's $\alpha = .61$ and $.78$, respectively.

Convergent Validity

Figure 1 displays correlations between FASI, ARI, and CL-ARI scales, across all informants. The correlation between FASI-P and ARI-P total scores was significant and strong, $\rho = .73$, 95% CI [.63, .80], $p < .001$. The correlation between FASI-P and CL-ARI total scores was also strong, $\rho = .55$, 95% CI [.39, .68], $p < .001$. There was a significant, moderate correlation between FASI-P and ARI-C total scores, $\rho = .32$, 95% CI [.15, .48], $p < .001$. Within the FASI-P, Participation and Modification subscales were strongly correlated, $\rho = .84$, 95% CI [.78, 0.88], $p < .001$. Both subscales were strongly correlated with ARI-P, ρ 's = .69 and .70, p 's $< .001$.

FASI-C and ARI-C total scores were moderately correlated, $\rho = .42$, 95% CI [.25, .57], $p < .001$. The correlations of FASI-C with CL-ARI and ARI-P total scores were also moderate, $\rho = .34$, 95% CI [.14, .51], $p = .002$ and $\rho = .43$, 95% CI [.26, .57], $p < .001$, respectively. Within the FASI-C, Participation and Modification subscales were moderately correlated, $\rho = .51$, 95% CI [.35, 0.63], $p < .001$. Both subscales were moderately correlated with ARI-C, ρ 's = .34 and .40, p 's $\leq .001$.

Discriminant Validity

The parent-rated FASI and parent-rated SCARED showed good discriminant validity (i.e., factor correlations $< .80$) (Rönkkö & Cho, 2022), factor correlation = .35, 95% CI [.33, .38], $\chi^2_{\text{diff}} = 488.13$, $p < .001$ (Figure 2). Parent-rated FASI and parent-rated MFQ showed good discriminant validity, factor correlation = .47, 95% CI [.41, .52], $\chi^2_{\text{diff}} = 76.90$, $p < .001$. The child-rated FASI and child-rated SCARED showed good discriminant validity, factor correlation

= .51, 95% CI [.46, .56], $\chi^2_{\text{diff}} = 81.44$, $p < .001$. The child-rated FASI and child-rated MFQ showed good discriminant validity, factor correlation = .53, 95% CI [.44, .62], $\chi^2_{\text{diff}} = 21.25$, $p < .001$. The correlation between FASI-C and CDI was small and not significant, $\rho = .19$, 95% CI [- .14, .49] $p = .260$.

Parent-Child Agreement

Parent- and child-rated FASI scores were moderately correlated, $\rho = .35$, 95% CI [.17, .50], $p < .001$ (Figure 3). FASI-P scores ($M=11.53$) were greater than FASI-C scores ($M=9.11$), $t(215.6) = -2.52$, $p = .012$. The FASI-P and FASI-C Participation subscales were weakly correlated, $\rho = .21$, 95% CI [0.03, 0.38], $p = .026$. The FASI-P and FASI-C Modification subscales were moderately correlated, $\rho = .36$, 95% CI [0.18, 0.51], $p < .001$.

Age and Sex Differences

Child age was negatively correlated with FASI-P scores, $\rho = -.22$, 95% CI [-.41, -.01], $p = .040$, but was not significantly correlated with FASI-C scores, $\rho = -.16$, 95% CI [-.38, .06], $p = .155$. Child age was negatively correlated with ARI-P scores, $\rho = -.25$, 95% CI [-.44, -.04], $p = .018$, and ARI-C scores, $\rho = -.24$, 95% CI [-.44, -.03], $p = .028$.

Family accommodation scores did not differ by child sex (male or female) for the FASI-P, $t(92.06) = .56$, $p = .578$, or FASI-C, $t(72.471) = .17$, $p = .869$.

Discussion

This study reports our work in developing and validating the FASI as a new measure of family accommodation behaviors for pediatric irritability. This extends previous research on family accommodation using the FAS and FASA (Calvocoressi et al., 1999; Lebowitz et al., 2020) in pediatric OCD and anxiety disorders to the highly prevalent and impairing transdiagnostic symptom of irritability. Using a sample of youth recruited from the community and clinic, our findings establish the FASI as an internally consistent measure with good convergent and divergent validity.

Confirmatory factor analyses demonstrated that a two-factor model fit the FASI data well. Model fit indices supported a model where items 1–4 loaded on the Participation subscale and items 5–9 loaded on the Modification subscale. These findings are in line with results from factor analyses that similarly compared two different two-factor models for the FASA (Lebowitz et al., 2020). The mapping of two factors onto Modification and Participation subscales, for both parent- and child-reported FASI, suggests that these subscales capture distinct dimensions of family accommodation. In our sample, the subscales showed similar correlations with irritability severity, though future work should investigate whether they are correlated with distinct child or parental factors and how these subscales predict treatment response. Our results show that

correlations between the Modification and Participation subscales were large in magnitude for parent-reported accommodation and medium in magnitude for child-reported accommodation. It is possible that parents are more aware of their behaviors and the reasons behind them, leading them to report modification and participation behaviors as closely linked in their efforts to manage their child's irritability. In light of these findings, it is important for researchers and clinicians to consider both parent and child perspectives when assessing family accommodation in the context of irritability. It is also recommended that individual subscales as well as total scores are reported.

Correlations between the FASI and irritability measures, which were particularly strong for parent-reported measures, indicated good convergent validity across parent- and child-reported scales. These results suggest that higher levels of family accommodation are associated with more severe irritability symptoms, a pattern similar to that observed with OCD and anxiety symptoms (Lebowitz et al., 2013; Strauss et al., 2015; van Groot Battavé et al., 2025; Wu et al., 2016). Results also supported the discriminant validity of the FASI, with factor correlations indicating that this scale is empirically distinct from anxiety and depression measures. While factor correlations between parent-reported FASI and these two symptom measures were moderate, as expected given that irritability is a symptom or associated feature of anxiety and depressive disorders (American Psychiatric Association, 2013), the correlation between parent-reported FASI and irritability scores was strong. This indicates that the FASI specifically assesses accommodation behaviors in response to irritability, distinguishing them from behaviors linked to anxiety or depression symptoms. Correlations between child-reported FASI and anxiety and depression measures fell within the desired values for supporting discriminant validity and were moderate in magnitude, as was the correlation between child-reported FASI and irritability. As such, children may not differentiate as strongly between parental accommodation behaviors experienced in response to their irritability, anxiety, or depression. Future research should compare parent- and child-reported FASI scores alongside behavioral or clinical outcomes to clarify whether parent-report better captures accommodation specific to irritability.

There was moderate agreement between child- and parent-reported family accommodation, with parents overall reporting greater scores than children. It is possible that children consistently underestimate, or that parents overestimate, the frequency of accommodation behaviors. Parents may be more aware of their accommodation behaviors and motivations behind them, which could result in parents reporting behaviors that children might not perceive as accommodation. Another possibility is that children may underreport accommodation behaviors due to social desirability bias, aiming to minimize the perceived burden they place on their family. Finally, it is also possible that this discrepancy arises from the difference in rating scale anchor labels across the two measures. The parent report scale is more time-specific, which may lead to more precise and higher reports. For example, the upper end of the scales are labelled as "Daily" and "Very Often" for parents and children, respectively. It is possible that children are aware of accommodation behaviors occurring at least daily, but do not report this as "Very Often." Future work could examine whether using the same rating scale anchors alters agreement between parent and child reports. However, it is worth noting that the mean difference between parent and child reports was relatively small (mean difference = 2.42) compared to the total possible score range (0–36). Future work could investigate why these differences between child- and parent-reported scores arise and whether there are meaningful differences between groups in the awareness of accommodation behaviors.

In our sample, both parent and child-reported irritability scores were negatively correlated with child age, aligning with prior research showing that irritability typically peaks in early childhood and gradually decreases with age (Copeland et al., 2015; Mayes et al., 2015; Roberson-Nay et al., 2015). These age-related differences may reflect developmental improvements in self-regulation (Casey et al., 2019), including strategies such as cognitive reappraisal (Willner et al., 2022). However, while parents perceive that they are accommodating their child's irritability less as the child grows older, child-reported family accommodation was not correlated with age. Further work is needed to understand whether this discrepancy reflects a differing awareness of family accommodation behaviors. The present findings mirror associations between child age and FASA scores (Lebowitz et al., 2020). In contrast, prior work finds that that age is not correlated with parent-reported accommodation of OCD symptoms as measured by the FAS (Flessner et al., 2011). Regarding sex differences, in line with findings from both the FASA and FAS (Flessner et al., 2011; Lebowitz et al., 2020), our results indicated no significant differences in accommodation for male and female youth, whether reported by child or parent.

The prevalence of family accommodation behaviors in our sample was very high, with over 95% of parents and children endorsing some level of accommodation. These results underscore the pervasiveness of these behaviors in families managing pediatric irritability, which aligns with findings from OCD and anxiety studies (Lebowitz et al., 2016; Storch et al., 2007). In addition, most parents in our sample reported distress from engaging in accommodation behaviors, highlighting the burden that irritability places on families. Given its high prevalence and associated parental distress, future research should seek to confirm whether family accommodation should be considered as a treatment target for youth irritability. Prior work indicates parent management training as a gold standard for youth with disruptive behaviors (Michelson et al., 2013), supporting the promise of parent-oriented interventions for pediatric irritability. Interventions, such as those already existing for pediatric OCD and anxiety (Dekel et al., 2021; Lebowitz et al., 2019), could focus on monitoring accommodation behaviors, helping families to reduce accommodation, and teaching parents other strategies for responding adaptively to their child's irritability.

This study, which is the first to assess family accommodation of irritability, has several strengths. The sample included youth from the community and clinic with a range of irritability symptoms, from low to severe, across multiple diagnoses. In addition, irritability and family accommodation were assessed using a multi-informant approach. However, several limitations are worth noting. First, the sample size was insufficient to conduct both exploratory and confirmatory factor analyses on separate subsamples, which would have strengthened the validation of the FASI's factor structure. Future research should aim to address this by using larger, independent samples. Additionally, our sample was predominantly White, with relatively high parental education and household income levels, limiting the generalizability of results. Future research is needed to confirm validity of the FASI in diverse cultural and socioeconomic contexts. Family accommodation researchers should also consider that norms and perceptions regarding child-rearing and family dynamics vary between cultural groups (Lansford, 2022), and test whether this impacts the reporting and outcomes of accommodation. Another limitation of this study is the absence of longitudinal data to evaluate the test-retest reliability of the FASI, which is important to determine whether observed changes in FASI scores over time reflect true changes in accommodation or the unreliability of the measure. Establishing test-retest reliability

is essential to evaluate the FASI's potential for tracking long-term progression and treatment outcomes of family accommodation. Finally, it is unclear if similar or divergent accommodations would be made for youth enriched for irritability relative to those with an anxiety disorder diagnosis. Future research with data from both FASI and FASA is important to assess whether irritability-related accommodation behaviors are similar or unique from anxiety-related accommodation behaviors, and to test whether the FASI provides incremental validity beyond the FASA.

While these limitations suggest areas for further investigation, our findings indicate that the FASI is a valuable tool for clinicians and researchers to assess the extent and nature of family accommodation in children with irritability. Given the alignment between the present results and existing research on accommodation of pediatric OCD and anxiety, interventions focused on reducing family accommodation offer great promise. Further research exploring the causal relationships between family accommodation and irritability is needed in order to inform the development of such intervention strategies.

Conclusion

The FASI is a promising new tool for assessing family accommodation of pediatric irritability. This study provides evidence for its validity and reliability, as well as insights into the prevalence of accommodation behaviors in families with irritable children. Existing interventions aimed at reducing family accommodation have shown promise in treating pediatric OCD and anxiety. Longitudinal research can use the FASI to assess whether decreasing family accommodation alleviates irritability symptoms, which would inform treatment approaches.

Data Availability Statement

De-identified study data, analysis code and FASI scale are available at <https://osf.io/qfn98/>.

Journal Pre-proofs

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TABLES

Table 1. *Descriptive Statistics.*

Measure	N	Mean	SD	Min	Max
FASI-P Total	124	11.53	8.78	0	36
FASI-P Participation	124	6.20	3.96	0	16
FASI-P Modification	124	5.31	5.24	0	20
FASI-P Consequences	124	4.61	3.49	0	12
FASI-P Distress	124	1.60	1.10	0	4
FASI-C Total	112	9.11	5.83	0	29
FASI-C Participation	112	5.45	3.29	0	14
FASI-C Modification	112	3.66	3.49	0	17
FASI-C Consequences	112	3.91	3.11	0	12
FASI-C Distress	112	1.46	1.19	0	4

FASI-C Beliefs	112	5.88	2.44	0	11
ARI-P Total	127	5.24	3.53	0	12
ARI-C Total	117	4.26	3.28	0	12
CL-ARI Total	94	27.32	16.96	0	66.02
SCARED-P Total	113	16.87	12.05	0	57
SCARED-C Total	111	21.37	14.00	0	59
MFQ-P Total	71	4.61	4.33	0	20
MFQ-C Total	72	5.14	5.29	0	25
CDI Total	41	11.41	8.93	0	35

Note. FASI Participation and Modification scores were calculated based on CFA findings. FASI-P = Family Accommodation Scale for Irritability (Parent); FASI-C = Family Accommodation Scale for Irritability (Child); ARI-P = Affective Reactivity Index (Parent); ARI-C = Affective Reactivity Index (Child); CL-ARI = Clinician Affective Reactivity Index; SCARED-P = Screen for Child Anxiety Related Disorders (Parent); SCARED-C = Screen for Child Anxiety Related Disorders (Child); MFQ-P = Mood and Feelings Questionnaire (Parent); MFQ-C = Mood and Feelings Questionnaire (Child); CDI = Child Depression Inventory.

Table 2. CFA Standardized Factor Loadings.

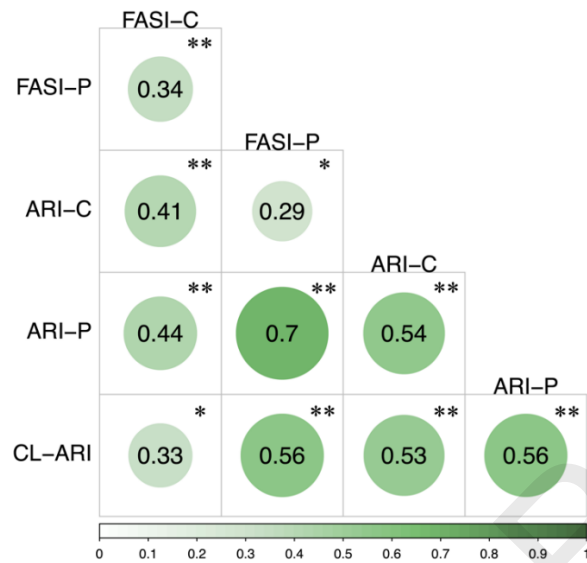
Item	FASI-P		FASI-C	
	Participation		Modification	
	Participation	Modification	Participation	Modification
1	.806		.551	
2	.734		.466	
3	.885		.583	
4	.854		.704	
5		.893		.618
6		.937		.752
7		.860		.689
8		.878		.900
9		.943		.751
Factor correlation	.935		.735	

Note. FASI-P = Family Accommodation Scale for Irritability (Parent); FASI-C = Family Accommodation Scale for Irritability (Child).

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FIGURES

Figure 1. *Correlations Between FASI, ARI, and CL-ARI Scales Across Informants.*

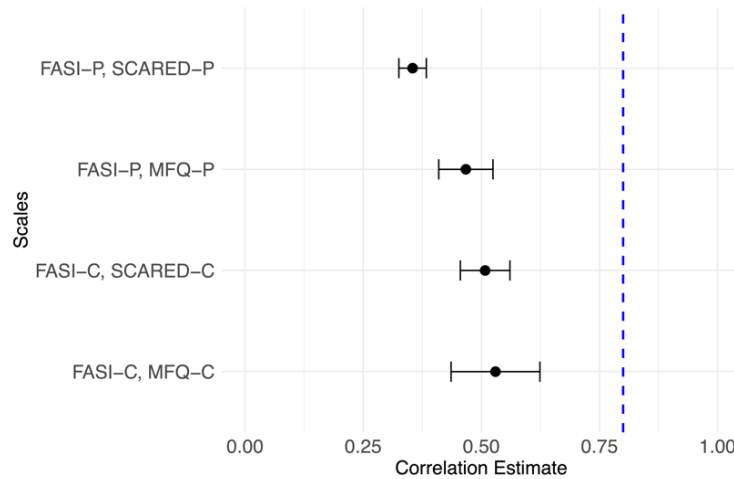


Note.

** $p < .001$

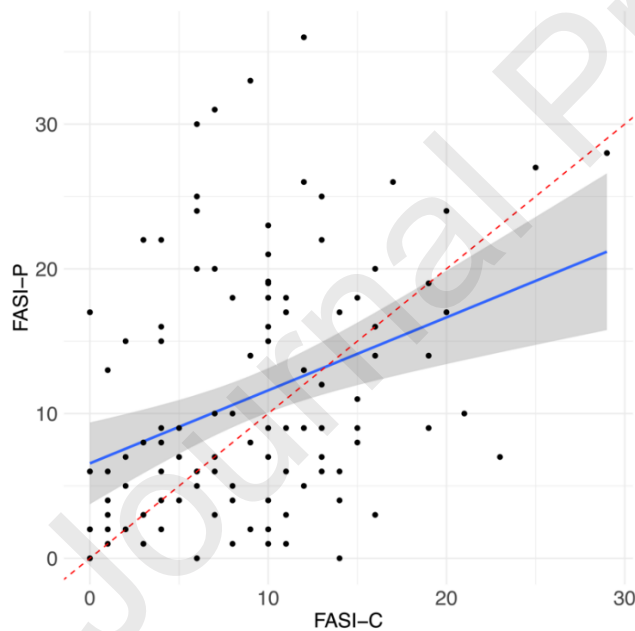
* $p < .01$

Figure 2. *Discriminant Validity Plot.*



Note. This figure displays factor correlations and 95% confidence intervals, estimated by CFA, between the FASI and measures of anxiety (SCARED) and depression (MFQ). The upper limits of confidence intervals are compared to the cutoff value of .80 to evaluate for discriminant validity (Rönkkö & Cho, 2022). Upper limits lower than the cutoff value provide support for discriminant validity.

Figure 3. *Correlation Between Parent- and Child-Reported FASI.*



Note. Dashed red line indicates $x=y$ reference line.

CRediT Author Statement

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