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Development of the Pica, ARFID, and Rumination Disorder Interview, a multi-informant, semi-structured interview of feeding disorders across the lifespan: A pilot study for ages 10 to 22

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Abstract

Objective: Avoidant/restrictive food intake disorder (ARFID), pica, and rumination disorder (RD) were added to the revised *DSM-5* Feeding and Eating Disorders chapter in 2013. We developed a structured interview—the Pica, ARFID, and Rumination Disorder Interview (PARDI)—to assess the presence and severity of these diagnoses for evaluation and treatment planning in clinical and research settings. Here we describe the development of the PARDI and provide a preliminary report on feasibility, acceptability, reliability, and validity in relation to ARFID.

Method: We created an initial item pool from existing measures of similar constructs and clinical experience. The PARDI includes items assessing the level of endorsement and overall severity of common ARFID features organized into profiles (i.e., sensory sensitivity, lack of interest in eating, and fear of aversive consequences) and algorithms for diagnosing ARFID, Pica, and RD. We collected initial psychometric data from participants (10–22 years) with ARFID ($n = 39$), clinically significant avoidant/restrictive eating ($n = 8$), and healthy controls ($n = 10$).

Results: On average, the PARDI took 39 minutes to complete and was acceptable to participants. All subscales achieved internal consistency greater >= .77, and inter-rater reliability for the ARFID diagnosis was moderate ($\kappa = .75$). Individuals with ARFID scored significantly higher than healthy controls on ARFID severity and ARFID profiles.

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Conflicts of interest: Dr. Thomas receives an honorarium for her service as Associate Editor for the *International Journal of Eating Disorders*. Drs. Thomas and Eddy will receive royalties for their book, *Cognitive-Behavioral Therapy for Avoidant/Restrictive Food Intake Disorder: Children, Adolescents, and Adults* (Cambridge University Press).

Discussion: The PARDI appears acceptable to respondents and preliminary evidence of reliability and validity has been demonstrated in an initial sample. Larger-scale validation studies are currently underway. The PARDI is freely available to clinicians and researchers.

Introduction

Avoidant/restrictive food intake disorder (ARFID), pica, and rumination disorder (RD) were recently added to a combined Feeding and Eating Disorders chapter in *DSM-5* (APA, 2013). *DSM-5* took a new lifespan approach, removing the *DSM-IV* section "Disorders Usually First Diagnosed During Infancy, Childhood and Adolescence" and introducing a "Feeding and Eating Disorders" chapter, which allows for diagnoses in adulthood as well as in childhood and adolescence. ARFID represents a revised and expanded version of the *DSM-IV* (APA, 1994) feeding disorder of infancy and early childhood, in recognition that ARFID symptoms can occur at all ages. ARFID is characterized by avoidant and restrictive eating associated with failure to meet nutritional and/or energy requirements leading to: significant weight loss or failure to gain expected weight (or faltering growth in children); dependence on oral nutritional supplements or enteral feeding; nutritional deficiencies; and/or significant difficulties with psychosocial functioning. Although some presentations of ARFID resemble those of anorexia nervosa (AN) in terms of very restricted food intake and resultant weight loss or faltering growth, underlying motivations differ markedly (APA, 2013). While AN is associated with body image disturbance and body weight or shape concerns, these are not core features of ARFID (APA, 2013; Becker et al., under review). Instead, in ARFID, intake is restricted for reasons that may include avoidance based on sensory aspects of food or eating (e.g., taste, smell, texture); lack of interest in food or eating; or because of the feared negative consequences (e.g. choking, vomiting) associated with eating (APA, 2013; Thomas & Eddy, 2018). Pica is characterised by persistent eating of non-nutritive substances/items for at least one month; its occurrence should be inappropriate to the individual's developmental level, and not part of a culturally or socially normative practice (APA, 2013; Hartmann, Becker, Hampton, & Bryant-Waugh, 2012). RD is characterized by repeated regurgitation of food for a period of at least a month. The regurgitation should not primarily be due to a medical condition and should not occur exclusively in the course of other feeding and eating disorders (APA, 2013; Hartmann et al., 2012). Both pica and RD may also be first diagnosed in adolescence or adulthood and have therefore been included in the Feeding and Eating Disorders chapter so they can be diagnosed across the lifespan (Bryant-Waugh et al, 2010).

Despite the inclusion of ARFID, pica and RD in *DSM-5*, a comprehensive measure to establish the severity and clinical features of these disorders is still lacking. While some structured assessment tools to diagnose or screen for these disorders have been published, none of them evaluate both the presence and severity of all three disorders simultaneously. Crucially, none of these measures provides a continuous index of psychopathology severity or related impairment, which is essential for treatment planning, evaluation of clinical outcomes, and refinement of diagnosis. Additionally, they do not provide a multi-informant approach, despite the fact that parents are often included in the treatment of children and young people with ARFID (Thomas & Eddy, in press). For example, the Eating Disorder Assessment for *DSM-5* (EDA-5; Sysko et al., 2015) can be used to confer ARFID, pica, and

RD diagnoses, although its diagnostic properties have not been evaluated for these groups. The Structured Clinical Interview for *DSM-5* (SCID-5; First, Williams, Karg, & Spitzer, 2014) can also be used to diagnose ARFID but does not evaluate constructs relating to pica or RD. Both interviews are suitable for adolescents and adults only, despite epidemiological data suggesting that pica, RD, and ARFID are common in children (APA, 2013). Conversely, the Diagnostic Interview Schedule for Children (DISC-IV; Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000) generates pica (but not ARFID or RD) diagnoses, but is only suitable for children, despite evidence that pica, RD, and ARFID also occur in adults (Delaney et al, 2015; Thomas & Murray, 2016). Brief screening measures for ARFID include the Nine-item ARFID screen (NIAS; Zickgraf & Ellis, 2018) and the Eating Disturbances in Youth Questionnaire (EDY-Q; Hilbert & van Dyck, 2016), which also includes screening items for pica and RD.

Some other measures of childhood feeding disorders exist, but most are based on *DSM-IV* conceptualizations and none maps onto *DSM-5* constructs and criteria. Moreover, most of the available measures are questionnaire-based rather than clinical interviews. Several measures assessing picky or selective eating in population samples are also available (e.g. Wardle et al, 2001; Pliner & Hobden, 1992–see Table 1 for additional measures) but all are too broad to measure ARFID psychopathology specifically. Whereas selective or picky eating is common in epidemiological studies (Wildes, Zucker, & Marcus, 2012), the psychiatric disorder ARFID has been shown to be far less common (Hay, Mitchison, Collado, González-Chica, Stocks, & Touyz, 2017; Kurz, Van Dyck, Dremmel, Munsch, & Hilbert, 2015). However, prevalence studies of ARFID have to date relied on self-reported measures (Kurz et al., 2015) or unvalidated clinical interviews (Hay et al., 2017), making it challenging to ascertain the frequency of ARFID in the general population. Indeed, available estimates range widely, from 0.3% by clinical interview in an epidemiological study of Australian adults (Hay et al., 2017), to 3.2% by self-report survey among Swiss schoolchildren ages 8–13 years old (Kurz et al., 2015). Even less is known about the community prevalence of pica and rumination disorder, but in the same study of Swiss youth, 1.7% had clinically significant rumination behavior, 3.8% had clinically significant pica behavior, and 1.1% had both (Murray, Thomas, Hinz, Munsch, & Hilbert, in press).

In summary, although measures of constructs related to ARFID exist, there is currently no comprehensive assessment measure of ARFID, pica, and RD symptoms that is: (1) suitable for both children and adults; (2) has a multi-informant approach; (3) assesses all relevant *DSM-5* constructs and diagnostic criteria; (4) provides a continuous measure of psychopathology severity; and (5) assesses related impairment. The lack of a valid and reliable assessment of these disorders will hamper potential advances in clinical communication, treatment planning, epidemiological inquiry, primary prevention, and basic research. We therefore aimed to develop a new structured multi-informant clinical interview —the Pica, ARFID, and Rumination Disorder Interview (PARDI)—to fill this gap. The purpose of this paper is to describe the development of the PARDI and to provide a preliminary report on feasibility, acceptability, reliability, and initial validity among children, adolescents, and young adults with ARFID; clinically significant avoidant/restrictive eating; or no eating difficulties. We hypothesized that the PARDI would have adequate reliability

(i.e., internal consistency, inter-rater reliability) and validity (i.e., that individuals with ARFID would score higher than those with no eating difficulties on all subscales).

Method

We used a multi-step process to create the PARDI. First, we generated an initial item pool by identifying relevant concepts from existing measures of similar constructs (see Table 1). We also drew from our collective clinical experience evaluating and treating patients with pica, ARFID, and RD at three sites (i.e., London, Boston, and New York) to develop additional items. During the time period that the PARDI was being developed, RBW, LC, and NM and their team at the London site were evaluating approximately 200 patients per year with ARFID and 10–20 patients per year with either pica or RD. At the Boston site, JJT and KTE and their team were evaluating > 50 patients per year with ARFID and 5 per year with RD. Second, we piloted the measure in routine care at all three sites and made several rounds of revisions based on patient and clinician feedback. Third, we collected initial reliability and validity data from children and adolescents ages 10–22 years ($N = 57$) who completed the PARDI as part of a larger research study (Neurobiological and Behavioral Risk Mechanisms of Youth Avoidant/Restrictive Eating Trajectories—National Institute of Mental Health R01MH108595).

Generating the initial PARDI item pool

The first step in developing the PARDI was reviewing existing measures of similar constructs. Table 1 provides an overview of existing diagnostic interviews as well as screening and questionnaire measures of feeding disorders, picky or selective eating in population samples. We created a list of potential items from these measures and grouped these according to construct captured. We subsequently added items to capture constructs that appeared to be missing, based on our collective clinical experience.

Form and content of the PARDI

The PARDI includes a screen, an introduction, and diagnostic and severity items for pica, ARFID, and RD. The purpose of the screen is to rule out the presence of other eating disorders (specifically, AN, bulimia nervosa [BN], binge eating disorder [BED], or a related form of other specified feeding or eating disorder [OSFED]) that would preclude a diagnosis of pica, ARFID, or RD per *DSM-5* trumping rules (APA, 2013). The introduction includes items assessing growth and development, and physical and/or mental health conditions that would rule out a feeding disorder diagnosis, as well as the current pattern of feeding and/or eating. The remaining items are intended to inform the diagnostic algorithm (i.e., the combination of items that determine whether the participant meets criteria for pica, ARFID, or RD by DSM-5 criteria) and provide severity ratings for pica, ARFID, and RD. To assess the heterogeneity of ARFID specifically, the PARDI also contains three profiles with continuous ratings of severity for sensory sensitivity, lack of interest in eating, and fear of aversive consequences. These three PARDI profiles correspond with the three ARFID presentations described in *DSM-5*, which have been replicated in both clinical (Norris et al., 2018) and community (Kurz et al., 2016) samples. Based on our clinical experience that severity varies even within profiles, and that some patients with ARFID exhibit symptoms of

more than one profile (Thomas et al., 2017), we opted for a dimensional rather than categorical approach to profile assessment.

Similar to the Eating Disorder Examination (EDE; Fairburn, Cooper, & O'Connor 2008), the majority of PARDI items are scored on a 7-point scale ranging from 0 (no symptoms) to 6 (severe symptoms). Like the EDE, the PARDI includes items assessing both the frequency and severity of relevant constructs. The remaining items invite responses that are either qualitative (e.g., "I would like to ask you about a typical day of eating and drinking. Starting with when you wake up, can you tell me about what you typically eat and drink throughout the day?"), or categorical ("Are you currently receiving any tube feeding?" with response options of yes or no). Table 2 provides an example item from each PARDI profile.

To support multi-informant assessment, there are four parallel versions of the PARDI: (1) Parent/Carer (2–3) (for the parents of 2–3-year-olds); (2) Parent/Carer (4+) (for the parents of 4-year-olds and up); (3) Child (for 8–13 year olds); and (4) Young person/Adult (for 14 year olds and up). Each version assesses the same constructs and contains similar items. However, the wording and response options have been adapted to include developmentally appropriate scenarios, vocabulary, and content. For example, only individuals less than 20 years old are asked about faltering growth. Specifically, both the Parent/Carer (2–3) and the Parent/Carer (4+) ask "Over the past 3 months has there been concern (e.g. from doctors, family etc.) that your child is not growing taller as he/she should?" In the contrast, the Child version asks "Over the past 3 months has your doctor or anyone in your family worried that you are not growing taller?" The Young/Person adult version asks the question in the same with as the Child version, with instructions from the interviewer to skip this item if the individual is 20 years or older.

When two versions of the interview are required, separate administration to parents and children is recommended. The PARDI rating sheet, as well as the Child and Young Person/Adult versions of the interview are freely available as an online supplement to the current article. Copies of the two Parent/Carer versions are available upon request from the first author (RBW).

Following administration of the PARDI, the diagnostic algorithms can be applied to the responses to generate diagnoses of pica, ARFID and RD. Similar to the EDE, the interview is designed as a semi-structured, investigator-based assessment tool, so that training in its use is recommended to maximize reliability.

Participants

Participants in the initial pilot study were 57 males and females aged 10–22 years who completed either the Child (n = 26) or Young person/Adult (n = 31) version of the PARDI as part of an ongoing study of the neurobiology of ARFID in Boston. To test the hypotheses of the ongoing larger study of neurobiology, we recruited both healthy controls (n = 10) as well as individuals with clinically significant avoidant/restrictive eating, including those with ARFID (n = 47). We further divided the avoidant/restrictive eating group into participants with ARFID (n = 39) versus without ARFID (n = 8) using *DSM-5* criteria as assessed via the PARDI diagnostic items. As a result, individuals in the ARFID group endorsed not only

restricting their food intake by volume or variety, but also met one or more of the four components of Criterion A for ARFID, including objectively low weight or faltering growth; a vitamin deficiency as diagnosed by a medical professional; dependence on tube feeding or high-energy supplement drinks to meet a large proportion of calorie needs; and/or psychosocial impairment. Of note, to meet PARDI criteria for psychosocial impairment, participants needed to endorse that their eating problem caused at least moderate levels of impairment in eating with others, eating outside of the home, and/or daily functioning at school or work. In contrast, individuals in the avoidant/restrictive eating group endorsed restricting their intake by volume and/or variety, but did not meet any of the components of criterion A for ARFID. Of note, the PARDI diagnostic items (which we used to divide the avoidant/restrictive eating group into those with versus without ARFID) have little overlap with the much larger pool of severity and frequency items that comprise the overall severity and profile scores on which we compared the groups.

Individuals were eligible to participate as healthy controls if they reported no eating difficulties and did not meet criteria for any psychiatric disorders—including feeding or eating disorders—on the Kiddie Schedule for Affective Disorders (Kaufman et al., 2013). In contrast, in order to be eligible for the avoidant/restrictive eating group, participants needed to (1) endorse avoidant and/or restrictive eating symptoms on the KSADS that did not meet diagnostic criteria for AN, BN, BED, or a related OSFED; and (2) score below the clinical cut-off of 4.0 on the EDE-Q (Fairburn & Beglin, 2008), and (3) deny on the EDE-Q and KSADS any self-induced vomiting, laxatives, diuretics, fasting, or compensatory exercise for the past 28 days, and (4) not have a medical condition that could fully account for avoidant/restrictive eating symptoms. Due to the procedures required for the neurobiology study, self-reported history of a developmental disability was an exclusion criterion for both groups.

Assessors

Assessors in the pilot trial comprised two doctoral-level psychologists and four bachelors-level research assistants. All assessors received initial two-hour training from two of the measure co-authors (JJT and KTE) and, for the duration of the trial, attended a weekly 30-minute meeting (chaired by JJT) to address scoring questions and ensure inter-rater reliability. Interviews were audio-recorded so that portions could be played back at weekly meetings. The first author (RBW) resolved any scoring issues that could not be settled at the weekly meeting.

Feasibility and Acceptability

To evaluate feasibility, we measured administration time in minutes and compared the length of the interviews between participants with ARFID versus controls via *t*-test. To evaluate acceptability, we invited the first 10 participants meeting criteria for ARFID or avoidant/restrictive eating to provide open-ended feedback on their experience of the PARDI at the conclusion of the interview.

Reliability

To evaluate internal consistency reliability, we calculated the Cronbach's alpha of the ARFID severity scale as well as the three ARFID profiles (i.e., sensory sensitivity, lack of interest in eating, and fear of aversive consequences).[1] To evaluate inter-rater reliability, we randomly selected audio recordings of 10 participants with avoidant/restrictive eating and 5 healthy controls (i.e., 26% of the total sample), and had one of three assessors listen and make independent PARDI ratings. We then calculated Cohen's kappa for the ARFID diagnosis (coded as yes or no), as well as intraclass correlation coefficients for ARFID severity and the three ARFID profiles.

Validity

To provide a preliminary evaluation of validity, we compared the ARFID severity and profile scores for participants across all three groups (i.e., ARFID versus avoidant/restrictive eating versus healthy controls) via ANOVA, to test the hypothesis that individuals with ARFID would score significantly higher than both healthy controls as well as those with avoidant/restrictive eating who did not meet *DSM-5* criteria for ARFID. In pairwise comparisons following a significant omnibus test, we corrected for family-wise error rate with Fisher's least significant difference method.

Results

Table 3 presents sample characteristics including age, BMI, BMI centile, sex, race, and ethnicity for the ARFID, avoidant/restrictive eating, and control groups.

Feasibility and Acceptability

On average across all participants, the PARDI took 39.09 minutes. Administration time was significantly shorter for healthy controls ($M = 22.54$, $SD = 8.29$) versus individuals with ARFID or avoidant/restrictive eating (M = 42.33, SD = 12.17), t(53) = 6.00, $p < .001$.

The first 10 participants with ARFID or avoidant/restrictive eating whom we queried at the conclusion of the interview were positive in their feedback about the PARDI. Not all participants provided detailed responses to our queries. Of those who did provide detailed feedback, the two common themes that emerged were (1) appreciation for the interview being relevant to ARFID psychopathology; and (2) concern that the items were somewhat repetitive, even though they were designed to measure slightly different constructs. For example, one participant stated that, "This interview really gets ARFID." Another participant said, "I'm really glad you didn't ask me about body image. Everyone always thinks I'm afraid of getting fat, but I'm not." According to a third participant, "Can I ask why there's the same questions but worded differently? I'm not sure what the reason for that is."

[1]In order to calculate the Cronbach's alpha, with the whole sample, including youth and adults, we excluded item 35 about growing taller.

Reliability

Internal consistency of the three ARFID profiles was in the adequate to good range, with Cronbach's alphas as follows: sensory sensitivity (.77), lack of interest food or eating (.89), fear of aversive consequences (.79), and overall severity (.89). Cohen's κ for the ARFID diagnosis (coded as yes or no) was .75, demonstrating "moderate" agreement according to McHugh's (2012) criteria. Intraclass correlation coefficients were "excellent" (according Cicchetti's 1994 criteria) for all profile scores including overall severity (.99), sensory sensitivity (.99), lack of interest (.99), and fear of aversive consequences (.98).

Validity

All omnibus ANOVAs with group as the between-subjects factor comparing those with ARFID, avoidant/restrictive eating, and healthy controls on sensory sensitivity, lack of interest in food or eating, fear of aversive consequences, and ARFID severity were significant (all p's < .05, see Table 4). Post-hoc pairwise comparisons revealed several significant differences. Specifically, individuals with ARFID scored significantly higher than healthy controls on all four measures. Individuals with A/R eating scored significantly lower than those with ARFID, and significantly higher than healthy controls, on both severity and lack of interest. However, those with A/R eating did not differ significantly from either group on sensory sensitivity or fear of aversive consequences.

Discussion

Prior to the development of the PARDI, no single measure comprehensively conferred diagnoses and evaluated the relative severity of ARFID, pica, and RD. Furthermore, no single diagnostic tool could be used to assess the specific psychopathology of feeding disorders across the lifespan, complete with the developmentally appropriate inclusion of parent report for children or individuals with developmental disabilities. We developed the PARDI to overcome the limitations of existing measures and facilitate the assessment of pica, ARFID, and RD in both clinical and research settings. The findings of our pilot study suggest that, as we hypothesized, the PARDI demonstrated adequate feasibility, acceptability, reliability, and validity.

Our preliminary data suggest that the PARDI shows promise as a new measure, demonstrating feasibility and acceptability to an initial sample of participants with ARFID and healthy controls. In the current study, participants with ARFID and avoidant/restrictive eating remarked on the unique specificity and validating nature of the interview to describe their current difficulties. Their only negative feedback (i.e., about the potentially repetitive nature of the items) is common to diagnostic interviews that rigorously define diagnostic constructs (e.g., Thomas, Roberto, & Berg, 2014). While the interview took longer to administer than existing measures (e.g., EDA-5), administration time was similar to or shorter than existing measures of classical eating disorders that provide a similar amount of clinical information (e.g., EDE, Fairburn et al., 2008). We anticipate that the free availability of this measure will facilitate further research on ARFID.

Our initial reliability and validity data highlight that the psychometric properties of the PARDI are acceptable. With regard to reliability, internal consistency for the ARFID severity and individual profile scores were greater than .70. Furthermore, inter-rater reliability was substantial (.75) for the ARFID diagnosis (coded as yes/no) and excellent (>= .98) for continuous ratings including ARFID severity and the three ARFID profiles. Larger-scale validation studies in broader samples are underway to evaluate sensitivity, specificity, convergent validity, and discriminant validity. With regard to validity, as anticipated, individuals with ARFID scored significantly higher than healthy controls without feeding or eating disorders on ARFID severity and all ARFID profiles including sensory sensitivity, lack of interest in eating or food, and fear of aversive consequences.

Interestingly, individuals with ARFID scored significantly higher than those with avoidant/restrictive eating on ARFID severity and lack of interest in eating, though not sensory sensitivity and fear of aversive consequences. The finding that the groups differed on overall severity and lack of interest in eating highlights the preliminary promise of the PARDI for differentiating frank ARFID from clinically significant avoidant/restrictive eating. The finding that the two groups did not differ on sensory sensitivity could be due to the small sample size of this pilot study, or could be interpreted as being consistent with prior studies suggesting that many individuals in the general population exhibit picky or selective eating without meeting criteria for ARFID. Further, the lack of significant difference between the ARFID and the avoidant/restrictive eating group on fear of aversive consequences could be due to the low endorsement of fear of aversive consequences even in our ARFID sample, which is consistent with prior work. Indeed, in a study of elementary school students in Switzerland using the EDY-Q, fear of aversive consequences (5.0%) was the rarest ARFID profile endorsed, with nearly four times as many children (19.3%) endorsing lack of adequate intake and five times as many (26.1%) endorsing inadequate variety (Kurz et al., 2015). Alternatively, the lack of significance could be due to the positively skewed distribution of the fear of aversive consequences profile in our sample, which is also in line with findings that these symptoms are positively skewed among adults in the general population when assessed with the NIAS (Zickgraf & Ellis, 2018).

Strengths and Limitations

Study strengths include the development of an interview to measure ARFID, pica, and RD across the lifespan to address a previously unmet clinical and research need. Another strength is the compilation of a diverse item pool leveraging an international, multi-site collaboration. A further strength is the inclusion of individuals with ARFID, as well as healthy controls. Limitations of this initial pilot include the sole focus on ARFID, given the inclusion criteria for the parent study and the very low base rates of pica and RD at the site where initial data collection was conducted. Our sample size was also quite small and lacking in some aspects of diversity (e.g., race, ethnicity), leaving open the possibility of statistical artifacts in our analysis of reliability and validity. This limitation was particularly true of the A/R eating subgroup ($n = 8$). A further limitation is the focus on only two of the four PARDI formats (i.e., Child and Young Person/Adult versions) and the inclusion of participants from a fairly narrow age range (i.e., children and adolescents aged 10–22 years

old). These methodological limitations will be addressed in a further multi-site trial of the PARDI currently underway.

Conclusion

In summary, the PARDI is a promising new multi-informant, investigator-based interview to evaluate pica, ARFID, and RD across the lifespan that is freely available for clinicians and researchers. The PARDI has potential applications for clinical communication, treatment planning, evaluation of treatment response, and basic research. Specifically, the PARDI provides severity ratings across three ARFID profiles thus highlighting distinct rationales for food restriction that may require different treatment approaches (Thomas et al., 2017; Norris et al., 2018). Indeed, novel treatments for ARFID are currently under development (e.g., Fitzpatrick et al., 2015; Lesser et al., 2017; Thomas & Eddy, in press; Zucker et al., 2015), and there is initial evidence that the PARDI could be used to determine who may benefit from what type of treatment. Because we cannot study what we do not measure, it is our hope that the PARDI will stimulate much-needed further research on these understudied but impairing illnesses.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1.

Characteristics of existing measures of ARFID, pica, RD, and related symptoms

	Age range	Evaluates constructs relevant to:			Confers diagnosis?	Measures severity?	Multi-informant?
		Pica	ARFID	RD			
Diagnostic interviews							
Diagnostic Interview Schedule for Children (DISC-IV) *(Shaffer, Fisher, Lucas et al, 2000)*	6 −17 years	x			x		
Eating Disorder Assessment for *DSM-5* (EDA-5) *(Sysko et al, 2015)*	Adults	x	x	x	x		
Structured Clinical Interview for *DSM-5* (SCID-5) *(First, Williams, Karg et al, 2014)*	Adults	x			x		
Pica, ARFID, and Rumination Disorder Interview (PARDI) *(Bryant-Waugh, Micali, Cooke et al, 2018)*	2 years – adult	x	x	x	x	x	x
Questionnaire measures of feeding disorders							
Behavioral Pediatrics Feeding Assessment (BPFAS) *(Crist, McDonnell, Beck et al, 1994)*	7 months – 13 years		x			x	
Children's Eating Behavior Inventory (CEBI) *(Archer, Rosenbaum & Streiner, 1991)*	6 months – 12 years		x			x	
Pediatric Eating Assessment Tool (Pedi-EAT) *(Thoyre, Pados, Park et al, 2014)*	6 months – 7 years		x			x	
Eating Disturbances in Youth-Questionnaire (EDY-Q) *(Hilbert & van Dyck, 2016)*	8–13 years	x	x	x		x	
Mealtime Behavior Questionnaire *(Berlin, Davies, Silverman et al, 2010)*	2–6 years		x			x	
Montreal Children's Hospital Feeding Scale *(Ramsay, Martel, Porporino & Zygmuntowicz, 2011)*	6 months – 7 years		x			x	
Nine-item Avoidant Restrictive Food Intake Disorder Screen (NIAS) *(Zickgraf & Ellis, 2018)*	Adults		x			x	
The Screening Tool of Feeding Problems applied to children (STEP-CHILD)	2 −18 years		x	x		x	

	Age range	Evaluates constructs relevant to:			Confers diagnosis?	Measures severity?	Multi-informant?
		Pica	ARFID	RD			
(Seiverling, Hendy & Williams, 2011)							
The Screening Tool for Feeding Problems (STEP) *(Matson & Kuhn, 2001)*	Parents	x	x	x		x	
Measures of selective or picky eating in population samples							
Adult Eating Behaviour Questionnaire (AEBQ) *(Hunot et al, 2016)*	Adults		x			x	
Adult Picky Eating Questionnaire (APEQ) *(Ellis et al, 2017)*	Adults		x			x	
Child Eating Behaviour Questionnaire (CEBQ) Food Fussiness subscale *(Wardle et al, 2001)*	3–13 years		x			x	
Child Food Neophobia Scale (CFNS) *(Pliner, 1994)*	2–11 years		x			x	
Food Neophobia Scale (FNS) *(Pliner & Hobden, 1992)*	Adults		x			x	
Measures of lack of interest in food or eating							
AEBQ - Satiety Responsiveness, Enjoyment of Food, and Slowness in Eating subscales *(Hunot et al, 2016)*	Adults		x			x	
CEBQ—Satiety Responsiveness, Enjoyment of Food, and Slowness in Eating subscales *(Wardle et al, 2001)*	3–13 years		x			x	
Eating Inventory (EI)—Hunger subscale *(Stunkard & Messick, 1985)*	Adults		x			x	
Eating Pathology Symptoms Inventory (EPSI)—Restriction subscale *(Forbush et al, 2013)*	14 years and up		x			x	
Measures of concern about the aversive consequences of eating							
Emetophobia Questionnaire (EmetQ-13) *(Boschen et al, 2013)*	Adults		x			x	
Specific Phobia of Vomiting Inventory	Adults		x			x	

	Age range	Evaluates constructs relevant to:			Confers diagnosis?	Measures severity?	Multi-informant?
		Pica	ARFID	RD			
(SPOVI) *(Veale et al, 2013)*							

Table 2.

Example items* from the Pica, ARFID, and Rumination Disorder Interview (PARDI)

PARDI profile	Example item
Pica severity	In the past month, on how many days have you eaten [non-nutritive/non-food item(s)]? 0 — No pica behaviour 1 — Pica behaviour on 1 to 5 days 2 — Pica behaviour on less than half the days (6 to 12 days) 3 — Pica behaviour on half the days (13 to 15 days) 4 — Pica behaviour on more than half the days (16 to 22 days) 5 — Pica behaviour almost every day (23 to 27 days) 6 — Pica behaviour every day
ARFID severity	Over the past month, has there been concern (e.g., from doctors, family) that you are having difficulty meeting your calorie needs [by eating]? *Note: Do NOT count calories that come from tube-feeding, nutritional supplement drinks, or other high energy drinks. If the respondent has difficulty answering, the interviewer can take examples from pattern of eating above.* 0 — No difficulty meeting calorie needs 1 — Nearly meeting calorie needs 2 — Mild difficulty meeting calorie needs 3 — Mostly meeting calorie needs 4 — Moderate difficulty meeting calorie needs 5 — Major difficulties meeting calorie needs 6 — Not meeting calorie needs at all
ARFID sensory sensitivity	Over the past month, have you been put off food if it doesn't look "right" (e.g., burnt ends of ` chips/fries, broken biscuits/cookies)? 0 — Not sensitive to the appearance of food 1 — 2 — Sensitive to the appearance of some foods 3 — 4 — Sensitive to the appearance of most foods 5 — 6— Extremely sensitive to the appearance of all food
ARFID lack of interest	Over the past month, have you forgotten to eat or found it difficult to make time to eat? 0 — Never forgets to eat 1 — 2 — Sometimes forgets to eat 3 — 4 — Often forgets to eat 5 — 6 — Always forgets to eat
ARFID fear of aversive consequences	Over the past 4 weeks, have you been concerned that eating will make you vomit (i.e. involuntarily)? (Note: Do not count self-induced vomiting.) 0 — Never 1 — 2 — Sometimes 3 — 4 — Often 5 — 6 — Always

PARDI profile	Example item
Rumination disorder severity	Over the past month, have you experienced any medical problems from bringing food back up into your mouth (examples include heartburn, dental cavities, weight loss , etc.)? 0 — No medical problems 1 — 2 — One mild medical problem (e.g. possibly related dental cavities or mild heartburn) 3 — 4 — One moderate medical problem or multiple mild medical problems (e.g. moderate weight-loss or heartburn requiring additional medical attention or medication) 5 — 6 — At least one severe medical problem (e.g. severe weight loss or several obviously related dental cavities requiring dental treatment)

Table 3.

Sample characteristics of participants in initial pilot study of the Pica, ARFID, and Rumination Disorder Interview (PARDI)

	ARFID	A/R eating	Healthy controls
n	39	8	10
Mean age (SD)	14.59 (3.63)	13.63 (2.56)	16.30 (4.79)
Adolescents < 20 years old, *n* (%)	33 (85%)	8 (8%)	6 (60%)
Mean BMI Centile (SD)	31.28 (34.81)	49.31 (25.91)	44.98 (28.96)
Adults ≧ 20 years old, *n* (%)	6 (15%)	0 (0%)	4 (40%)
Mean BMI (SD)	20.35 (5.08)	N/A (N/A)	22.12 (2.96)
Sex			
Male, *n* (%)	21 (54%)	6 (75%)	3 (30%)
Female, *n* (%)	18 (46%)	2 (25%)	7 (70%)
Ethnicity, *n* (%)			
Hispanic/Latino	2 (5%)	1 (12.5%)	1 (90%)
Not Hispanic/Latino	37 (95%)	7 (87.5%)	1 (10%)
Race *, *n* (%)			
American Indian/Alaska Native	0 (0%)	0 (0%)	0 (0%)
Black/African American	3 (8%)	0 (0%)	1 (10%)
Asian	1 (3%)	0 (0%)	0 (0%)
Native Hawaiian/Other Pacific Islander	0 (0%)	0 (0%)	0 (0%)
White	36 (92%)	8 (100%)	10 (100%)

* Note: Individuals were given the option to select more than one category for race.

Table 4.

Diagnoses and subscale scores for subjects in the initial pilot study of the Pica, ARFID, and Rumination Disorder Interview (PARDI)

	ARFID	A/R eating	Healthy control	Test statistic	*p*	Effect size
n	39	8	10			
Received PARDI diagnosis of ARFID, *n* (%)	39 (100%)	0 (0%)	0 (0%)	*N/A*	N/A	N/A
PARDI profiles (Mean, SD) Median (Range)						
ARFID severity	2.41 (.91)[a] 2.31 (.81, 5.25)	1.63 (.76)[b] 1.66 (.63, 3.00)	.31 (.22)[c] .31 (.00, .56)	$F(2) = 26.65$	.000	*partial* $\eta^2 = .11$
ARFID sensory sensitivity	1.23 (1.06)[a] 1.00 (.00, 4.00)	.80 (.62)[ab] .85 (.00, 1.50)	.04 (.13)[b] .00 (.00, .40)	$F(2) = 6.84$	.002	*partial* $\eta^2 = .20$
ARFID lack of interest in eating	1.69 (1.32)[a] 1.45 (.00, 4.55)	.68 (.75)[b] .27 (.00, 2.09)	.19 (.23)[b] .09 (.00, .64)	$F(2) = 8.16$	.001	*partial* $\eta^2 = .23$
ARFID fear of aversive consequences	.40 (.65)[a] .00 (.00, 2.00)	.00 (.00)[ab] .00 (.00, .00)	.00 (.00)[b] .00 (.00, .00)	$F(2) = 3.33$	.043	*partial* $\eta^2 = .50$