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(Article begins on next page)

Eating and Weight Disorders - Studies on Anorexia, Bulimia and Obesity

Development and validation of the Premorbid Childhood Traits Questionnaire (PCT-Q) in Eating Disorders

--Manuscript Draft--

Manuscript Number:	EAWD-D-19-00142R2
Full Title:	Development and validation of the Premorbid Childhood Traits Questionnaire (PCT-Q) in Eating Disorders
Article Type:	Original Article
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Abstract:	<p>Purpose. Some features of eating disorders (EDs) are often present in childhood before the onset of the ED. We developed a novel questionnaire in order to retrospectively capture such childhood traits.</p> <p>Methods. Focus groups were conducted at the University of California – San Diego, USA, and at the University of Turin, Italy. Three focus groups were conducted at each site, interviewing patients and parents in order to identify those traits that most commonly characterize childhood of patients with EDs. A preliminary version of the Premorbid Childhood Traits Questionnaire (PCT-Q) derived from these focus groups was then administered to 94 consecutive inpatients with an ED and to 286 healthy controls (HCs) at the Turin site. Also, 208 participants' parents were enrolled as well; in fact, the PCT-Q was developed with both a proband and an informant version.</p> <p>Results. A 37-item final version of the PCT-Q was generated. Cronbach's alphas suggested acceptability for harm avoidance (HA), social phobia, alexithymia, interoceptive awareness (IA), and food obsessions. Inter-rater reliability ranged from fair to moderate. ED sufferers scored significantly higher than HCs on HA, social phobia, alexithymia, IA, and food obsessions.</p> <p>Conclusions. These findings support the possibility that premorbid traits contribute to a risk to develop an ED in some individuals.</p>
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Order of Authors Secondary Information:	
Author Comments:	<p>Turin, 1st July 2019</p> <p>Dear Prof. Massimo Cuzzolaro, Prof. Lorenzo M. Donini, Prof. A. Dakanalis,</p>

	<p>Please find attached the revised version of our manuscript "Development and validation of the Premorbid Childhood Traits Questionnaire (PCT-Q) in Eating Disorders".</p> <p>We would like to thank you and all reviewers for your encouraging comments and for helping us improve the paper. All the required amendments have been now addressed.</p> <p>Please find attached a point-by-point response letter. All changes have been highlighted in yellow and using the track changes in Word.</p> <p>Thank you very much in advance.</p> <p>Best regards, Enrica Marzola</p>
<p>Response to Reviewers:</p>	<p>We would like to thank the Editor and the reviewers for their overall positive comments. We endeavored to address all issues. Please find below a point-by-point response to the comments.</p> <p>Reviewer #2: The authors answered properly to the reviewers' questions. Nevertheless I suggest to revise:</p> <ol style="list-style-type: none"> 1. Introduction because there too many "Also"; Amended. 2. Page 11, line 32- maybe reference it's not correct; Amended. 3. Page 13, line 7 - authors insert BMI but without any unit of measurement (kg/m2). Amended. <p>The paper then is worth publishing. Thanks a lot.</p> <p>Reviewer #3: The authors have addressed many of my concerns including improving the methods section and adding information about the participants and measures. Thank you for helping us clarify this work.</p> <p>I still have a few more concerns:</p> <ol style="list-style-type: none"> 1. Ad the previous #10. The reliability (in terms of Cronbach's alpha) should be calculated based on the current sample (when appropriate) and may be reported in addition to information about reliability estimates from other studies in the methods section. Added, thank you. 2. Ad #11. The authors report that they have calculated Cohen's d as an effect size measure for differences between groups (HC vs patients). I cannot find them in Table 3 and 4? We do apologize about that. Unfortunately, the uncomplete versions of Tables 3 and 4 were uploaded. We have now added the correct effect size columns, sorry again and thank you for catching this mistake. 3. Ad #12. I still believe that conducting an exploratory factor analysis would be a good idea. At least this should be mentioned in the discussion section as a suggestion for future research. Done. 4. Ad #17. I believe that the study limitations and future work should be in one place in the discussion, and it should also include the retrospective nature of the study. The limitations section has been moved to the conclusion of the dicussion, so limitations and future work are now in one place, and the retrospective nature of the study has been added as well. 5. Related to the tables with correlations. Two decimals are sufficient and vertical lines should be avoided. In the note it should be stated whether or not a two tailed-test that has been conducted. For p-values, write $p < .05$ and not 0.05 (drop the 0 before .). Done.

6. For Table 1, 0 before . may be omitted (for reliability estimates).
Done.

7. For Table 3, the exact p-values are reported whereas for the other tables * are added to significant finding and explained in the note. Suggest using a consistent approach to the reporting. E.g., add stars to the t-values in Table 3 and use the available space to present Cohen's d.
Amended, thank you.

8. The new Table 2 is not needed. Info may be reported in the text.
Done, thanks.

9. Some of the new sentences added, should be carefully proof read as they are currently a bit difficult to understand (probably a language problem).
Thank you, we modified the text following your suggestion.

We would like to thank the Editor and the reviewers for their overall positive comments. We endeavored to address all issues.

Please find below a point-by-point response to the comments.

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Amended.

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Done.

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Thank you, we modified the text following your suggestion.

[Click here to view linked References](#)

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4 **Development and validation of the Premorbid Childhood Traits Questionnaire (PCT-Q) in**
5
6 **Eating Disorders**
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11
12 Kaye³
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42 The study took place at two sites: at the University of California San Diego, Eating Disorders
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44 Research and Treatment Program, Chancellor Park, 4510 Executive Drive, Suite 315, San Diego
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46 CA 92121 and at the Eating Disorders Centre of the University of Turin, via Cherasco 11, 10126,
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48 Turin, Italy.
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4 **Abstract**
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8 **Purpose.** Some features of eating disorders (EDs) are often present in childhood before the onset
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10 of the ED. We developed a novel questionnaire in order to retrospectively capture such
11
12 childhood traits.
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16 **Methods.** Focus groups were conducted at the University of California – San Diego, USA, and
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18 at the University of Turin, Italy. Three focus groups were conducted at each site, interviewing
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20 patients and parents in order to identify those traits that most commonly characterize childhood
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24 (PCT-Q) derived from these focus groups was then administered to 94 consecutive inpatients
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26 with an ED and to 286 healthy controls (HCs) at the Turin site. Also, 208 participants' parents
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30 version.
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37 **Results.** A 37-item final version of the PCT-Q was generated. Cronbach's alphas suggested
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41 and food obsessions. Inter-rater reliability ranged from fair to moderate. ED sufferers scored
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43 significantly higher than HCs on HA, social phobia, alexithymia, IA, and food obsessions.
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48 **Conclusions.** These findings support the possibility that premorbid traits contribute to a risk to
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50 develop an ED in some individuals.
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54 Level of evidence: III: Evidence obtained from well-designed cohort or case-control analytic
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56 studies.
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Keywords: anorexia nervosa, premorbid trait, childhood, harm avoidance, interoceptive awareness.

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4 **Introduction**
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6 The onset of eating disorders (EDs) typically occurs in adolescence; however, some
7 common features of these illnesses are often already present before the ED onset [1,2]. The
8 available knowledge on risk factors has been broadened by a number of studies [3-5] and several
9 lines of research showed that also certain personality traits are involved in EDs [6] and can
10 represent vulnerability factors for EDs [7-9] as well as for other psychiatric illnesses [10].
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19 It may be best accepted that perfectionism is a risk factor for EDs [9,11] on the basis of
20 evidence showing a relationship between this personality trait and both anorexia (AN) [3] and
21 bulimia nervosa (BN) [12]. Still, childhood obsessive-compulsive personality traits (OCPTs)
22 have been demonstrated to represent medium potency risk factors for the development of a full-
23 blown ED [3,4]. Also, a premorbid diagnosis of obsessive-compulsive disorder has been found to
24 negatively impact on AN prognosis [2]. Similarly, harm avoidance (HA) [13] has been proposed
25 as potential risk factor for EDs [8]; it is characterized by cautiousness, anxiety, and inhibition,
26 and represents a hallmark of the ED spectrum [7,14]. Moreover, this temperament trait is
27 heritable and detectable in non-affected family members [9].
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41 Other traits which may predate the onset of an ED include interoceptive alterations
42 [15,16], and an imbalanced sensitivity to reward and punishment [17-19]. Poor interoceptive
43 awareness (IA) is represented by an impaired recognition of both emotional states and hunger
44 and satiety and it is often a core psychopathological element of the EDs [20]. Literature on
45 reward sensitivity in EDs is rapidly growing and studies reveal that those with an ED have high
46 punishment sensitivity also after recovery [17,18]. Therefore, reward alterations [21,22] may be
47 a trait already present in patients' childhood but, similarly to IA, no specific assessments are
48 currently available about childhood alterations in patients with EDs.
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4 Clinical experience suggests that some other characteristics predate the ED onset. For
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6 example, sleep problems are commonly found in both AN and BN [23] but as yet, there is no
7
8 information available for patients' sleep patterns in childhood. Furthermore, those with EDs in
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10 childhood tend to endeavor to do particularly well at school and report much commitment in
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12 hobbies and leisure activities. In spite of every-day clinical experience on the aforementioned
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14 features, no reliable instruments are to date available to evaluate them. As a result, a gap between
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16 clinical consensus and research needs emerges.
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21 Longitudinal research in the field of EDs is challenging also because these illnesses are
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23 relatively rare conditions [24]. Therefore, in order to maximize research feasibility and cost-
24
25 effectiveness, premorbid traits can be assessed in a retrospective fashion for research purposes.
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27 In this light, Southgate and collaborators in 2008 [25] published a retrospective self-report
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29 assessment of OCPTs named Childhood Retrospective Perfectionism Questionnaire (CHIRP) in
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31 order to assess perfectionism, inflexibility, and drive for order and symmetry [25]. This line of
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33 research derived from Anderluh and collaborators' work [3] that showed, using a semi-structured
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35 interview called EATATE Lifetime Diagnostic Interview, that OCPTs are stable traits with a
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37 high predictive value for development of EDs. According to the CHIRP results [25], those with
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39 an ED reported in childhood more behaviors indicating OCPTs than the control group, mirroring
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41 earlier results obtained with the EATATE interview [3]. To the best of our knowledge, no other
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43 validated self-report instruments are currently available to detect other premorbid alterations in
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45 the ED field.
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53 Given the relevance of identifying premorbid conditions in both research and clinical
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55 settings, we aimed to develop a novel questionnaire that expanded the CHIRP questions [25].
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57 Doing so, we aimed to expand the self-report measurement of premorbid traits, avoiding the
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4 time-consuming and costly methodology of clinical interviews, in order to focus on other
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6 individual (i.e., parenting style, biological, environmental not included) premorbid traits that
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8 might predate the onset of an ED potentially constituting a risk factor for the development of the
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10 ED itself. On one hand we followed the need to deepen the investigation of premorbid traits but
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12 on the other hand we had a focus on their correlations with other premorbid conditions and
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14 current personality and eating psychopathology features. Therefore, the overarching goal of this
15
16 study was to verify the presence of premorbid risk factors, expanding current knowledge on this
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18 topic, in order to better inform treatments and to pave the way to screening assessments to
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20 improve prevention. Grounded on literature data, clinical experience, and patients and their
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22 families' contributions we expected to develop an instrument able to capture childhood traits.
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32 **Materials and methods**

33 *Procedure*

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38 Three focus groups were first conducted at the University of California – San Diego
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40 (UCSD), USA, and then replicated at the University of Turin, Italy, by two experienced
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42 clinicians and researchers. Procedures were consistent at both sites. Groups were scheduled once
43
44 a week. Patients and patients' parents were interviewed together in an open-ended fashion and
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46 with simultaneous transcriptions in order to identify those traits that most commonly characterize
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48 childhood of patients with EDs. Groups were started and conducted asking open-ended questions
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50 like “Please, describe what were your (or your daughter’s) characteristics at school when she was
51
52 just a kid”; “Would you mind telling us how you (or your daughter) used to play with others
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54 when she was just a kid?”; “Did you (or your daughter) tried to achieve the best marks at school
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56 putting a lot of effort in school activities even when very young (e.g., 8 years old)?”.

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4 Simultaneous transcriptions were then read, analyzed and pooled together in order to identify
5 different groups of childhood traits. The following traits emerged: 1) HA; 2) reward sensitivity;
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7 3) social phobic aspects; 4) alexithymia; 5) achievement drive; 6) IA; 7) food obsessions; 8)
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9 worry about the future; 9) sleep problems, i.e., insomnia, sleep terror-like symptoms.
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12 Perfectionism and inflexibility have been mentioned and considered but are already assessed by
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14 the CHIRP questionnaire [25].
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19 As a second step, a 62-item questionnaire asking respondents for a yes/no response was
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21 developed targeting all the aforementioned constructs. Following Southgate *et al.* [25]
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23 methodology, the questionnaire has been formulated in both a proband and an informant version
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25 in order to minimize patients' recall bias. Items were added after checking them for face and
26
27 content validity. The original questionnaire was devised in English and then translated into
28
29 Italian. The first version was then polished following senior clinicians' comments and tested for
30
31 semantic comprehension on a pilot sample ($n = 25$) at both sites. According to respondents'
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33 feedback, four items were discarded so a 58-item version of the questionnaire, the Premorbid
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35 Childhood Traits Questionnaire (PCT-Q), was finally generated (fully available in the Tables S1-
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37 S4). As a final step, in order to validate the questionnaire, it was administered to a larger sample
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39 in addition to a battery of other assessments.
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46 ***Participants***

47 *Focus groups*

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50 Concerning the focus groups, 35 and 33 patients were recruited at UCSD and at the
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52 University of Turin, respectively. For all participants, at least one parent was present during the
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54 groups as well (both parents were co-present during the 75% of sessions at UCSD and 95% at
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4 the University of Turin). At both sites only females were included. At UCSD the vast majority of
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6 participants were Caucasian (98%), while all participants were Caucasian (100%) at the
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8 University of Turin site. Participants' mean age was 22.3 ± 3.4 years and 23.4 ± 2.8 years at UCSD
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10 and at the University of Turin, respectively, with no statistically significant differences between
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12 sites (data not shown).
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19 *Validation study sample*

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22 The initial clinical sample was composed of 112 eligible candidates consecutively
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24 recruited at the University of Turin, Italy, between March 2015 and March 2017. However, 18
25
26 patients were excluded because they refused to sign the informed consent or failed to complete
27
28 the assessment battery so 94 inpatients were finally involved in this study. Inclusion criteria
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30 were: a) meeting DSM-5 [26] criteria for AN, both subtypes, and BN as assessed by an
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32 experienced psychiatrist using the Structured Clinical Interview for DSM-5 [27]; and b) hospital
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34 admission for ED-related conditions. Fifty-two individuals (55.3%) were affected by AN
35
36 restricting subtype (R-AN) while forty-two (44.7%) by bulimic variants (either AN binge-
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38 purging subtype [BN-AN; $n = 26$] or BN [$n = 16$]).
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44 Healthy controls (HCs) were recruited at the same Institution through flyers and a total of
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46 286 HC (including medical students, psychology students, residents, individuals who were
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48 interested in giving their moral contribution to research) were finally enrolled. HCs were
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50 excluded if using psychotropic medications or meeting criteria for a current or lifetime diagnosis
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52 of EDs or other psychiatric disorders, as assessed by an experienced psychiatrist.
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4 Also 208 parents (patients: 32 mothers and 13 fathers; HCs: 148 mothers and 15 fathers)
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6 were enrolled in this study and completed the informant version of the PCT-Q independently of
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8 their participant family member.
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11 All participants' height and weight were measured by a trained nurse; these measures
12
13 were then used to calculate their Body Mass Index (BMI, expressed as kg/m²).
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17 This study was approved by the Ethics Committee of the Department of Neuroscience of
18
19 the University of Turin, Italy. Written informed consent was obtained by all participants. The
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21 focus groups conducted at the University of California, San Diego were part of a clinical
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23 program so did not require IRB approval.
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26 27 28 **Materials**

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30 Several assessments have been consistently used in the field of EDs garnering evidence on
31
32 general and eating psychopathology of patients with EDs. Therefore, in order to compare the
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34 preliminary findings of the PCT-Q with validated and widely used assessments of the ED field,
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36 all participants were asked to complete the following two batteries of assessments.
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42 1. Childhood traits: Participants assessed childhood traits (i.e., thinking back to the time when
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44 they were 10-12 years old) with the following measures:
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48 a) *Premorbid Childhood Traits Questionnaire* (PCT-Q, see Tables S1-S4): a self-report
49
50 questionnaire investigating childhood HA, reward sensitivity, social phobic aspects,
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52 alexithymia, achievement drive, IA, food obsessions, worry about the future, sleep
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54 problems. A self-report and informant versions of the questionnaire were administered to
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56 study participants with binary responses. Cronbach's alphas of the scales ranged from .06
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4 (reward sensitivity – then discarded from the final version of the PCT-Q) to .76
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6 (alexithymia). See Table 1 for reliability details.
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10 b) *Childhood Retrospective Perfectionism Questionnaire* (CHIRP) [25] : the CHIRP is a
11 self-report questionnaire with sound psychometric properties [25] which measures the
12 presence of OCPTs in childhood. Responses are binary (i.e., yes/no) and three subscales
13 (perfectionism, inflexibility, and drive for order and symmetry) are provided. Examples
14 of questions include the following: “At school, did you put more effort into your
15 schoolwork because of attention to detail or perfectionism, than your
16 friends/classmates?” (proband version); “At school, did your child put more effort into
17 their schoolwork because of their attention to detail or perfectionism, than their
18 friends/classmates?” (informant version).
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32 Current symptoms: Participants were asked to rate current behaviors and thoughts with the
33 following:
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37 a) *Temperament and Character Inventory* (TCI) [13]
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40 The TCI is a 240-item self-administered questionnaire divided into 7 dimensions. Four of
41 these dimensions assess temperament: novelty seeking (NS), harm avoidance (HA), reward
42 dependence (RD), and persistence (P). The other three dimensions assess character: self-
43 directedness (SD), cooperativeness (C), and self-transcendence (ST). Responses are binary
44 (i.e., true/false). The TCI showed good properties as regards both internal consistency and
45 test–retest reliability [13]. Examples of questions include: “I often feel tense and worried in
46 unfamiliar situations, even when others feel there is little to worry about”; “I have less energy
47 and get tired more quickly than most people”.
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4 *b) Frost Multidimensional Perfectionism Scale (FMPS) [28]*
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7 The FMPS is a 35-item self-report scale with solid psychometric properties [28] evaluating
8 perfectionism as a multidimensional concept. Six subscales are assessed on a five-point
9 Likert scale: Concern over Mistakes, Personal Standards, Parental Expectations, Parental
10 Criticism, Doubts about actions, and Organization. Higher scores reflect a greater level of
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perfectionism. Examples of questions include: “My parents set very high standards for me”;
“I should be upset if I make a mistake”.

c) Eating Disorders Inventory-2 (EDI-2) [29]

The EDI-2 is a self-report inventory that measures disordered eating attitudes, behaviors and personality traits common to individuals affected by an eating disorder. Eleven subscales assess symptoms and psychological correlates of the eating disorders; answers are rated on a Likert scale with high scores reflecting pathology. It is characterized by high internal consistency, indicated by Cronbach’s alpha values between .82 and .93 [31]. Examples of questions include: “I feel bloated after eating a small meal”; “When I am upset, I worry that I will start eating”.

Statistical analysis

To evaluate internal consistency, the Kuder-Richardson's coefficient and relative 95% confidence intervals have been calculated for all the subscales of the PCT-Q: harm avoidance, reward sensitivity, social phobic aspects, alexithymia, achievement drive, interoceptive awareness, food obsessions, worry about the future, sleep problems. With respect to Kuder-

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4 Richardson's coefficient, a level of .6 has been deemed acceptable also given the exploratory
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6 design of this study [32-33].
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10 Inter-rater reliability has been evaluated using Cohen's k method, considering 50th
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12 percentile of informants' responses as the cut off for each subscale to determine
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14 presence/absence of each trait. Results have presented with relative 95% confidence intervals
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16 (95%CI). According to Landis and Koch [34] values < 0 indicate no agreement, 0 – .20 slight
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18 agreement, .21 – .40 fair agreement, .41 – .60 moderate agreement, .61 – .80 substantial
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20 agreement, and .81 – 1 almost perfect agreement.
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25 Student's t-test has been used to evaluate the differences between groups for continuous
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27 variables.
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31 Cohen's d effect sizes were calculated as well; differences are defined as negligible (\geq -
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33 .15 and < .15), small (\geq .15 and < .40), medium (\geq .40 and < .75), large (\geq .75 and < 1.10), very
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35 large (\geq 1.10 and < 1.45), and huge (> 1.45).
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39 The Statistical Package for Social Sciences 24.0 (SPSS, SPSS Inc., Chicago, IL) was
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41 used for all analyses. In order to not overestimate the beta error, the alpha levels (two-tailed
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43 alpha = .05) were not adjusted for multiple comparisons.
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46 47 48 49 **Results**

50 51 52 *Current clinical characteristics of the sample*

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55 Participants were all Caucasian and most participants were women (HCs: 90.2% and ED
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57 patients: 92.6%, $p = .056$). Patients and HCs had a mean age of 24.8 ± 8.5 years and 23.7 ± 2.5
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4 years, respectively ($t = -1.88, p = .061$). Participants' BMI significantly differed between patients
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6 and HCs (ED patients' BMI: 15.9 ± 3.7 , HCs' BMI: 21.2 ± 2 ; $t = 17.33, p < .001$). Patients'
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8 duration of illness was 7.1 ± 7.34 years.

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11 Concerning current traits, patients with ED and HCs differed significantly on all TCI
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13 dimensions with the exception of persistence and self-transcendence (data not shown).

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15 Concerning perfectionism, ED individuals and HCs differed significantly on all scales but
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17 parental expectations; eating psychopathology resulted significantly different on all dimensions
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19 (data not shown).
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27 ***Reliability and inter-rater reliability of the PCT-Q***

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30 As regards the PCT-Q, Cronbach's alphas were considered to be acceptable for HA,
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32 social phobia, alexithymia, IA, and food obsessions (see Table 1). Therefore, reward sensitivity,
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34 achievement drive, worry about the future, and sleep problems were discarded from the final
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36 version of the PCT-Q. All scales reported a reliability measure, four scales had reliability $< .60$,
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38 two between $.60$ and $.70$, three between $.70$ and $.80$ and none over $.80$ so the median stability
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43 was 2.
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46 With respect to inter-rater reliability, 208 informants completed the PCT-Q as well,
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48 informant version (see Tables S2 and S4). They were all parents with participants' mothers ($n =$
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50 180) and fathers ($n = 28$) providing a complete assessment. With more detail, 45 were patients'
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52 parents and 163 HCs' parents. Cohen's k scores ranged from fair to moderate (see Table 1).
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56 **Table 1. Cronbach's alphas and Cohen's k of the nine subscales of the Premorbid Childhood Traits**
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58 **Questionnaire (PCT-Q).**
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	Total sample (n = 380)	Healthy controls (n = 286)	Eating disorder patients (n = 94)	Informants (n = 208)
	KR-20 (95%CI)	KR-20 (95%CI)	KR-20 (95%CI)	Cohen's k (95%CI)
Harm avoidance	0.72(0.67-0.76)	0.67(0.61-0.72)	0.65(0.53-0.75)	0.4(0.27-0.53)
Reward sensitivity	0.06(-0.1-0.2)	0.44(-1.14-0.21)	0.08(-0.24-0.34)	0.25(0.09-0.41)
Social phobia	0.75(0.71-0.79)	0.72(0.66-0.77)	0.7(0.59-0.76)	0.22(0.07-0.36)
Alexithymia	0.76(0.72-0.8)	0.62(0.55-0.69)	0.8(0.73-0.85)	0.38(0.24-0.52)
Achievement drive	0.42(0.32-0.51)	0.38(0.25-0.49)	0.54(0.36-0.67)	0.38(0.25-0.51)
Interoceptive awareness	0.64(0.59-0.7)	0.5(0.41-0.58)	0.69(0.58-0.77)	0.26(0.13-0.40)
Food obsessions	0.66(0.61-0.71)	0.44(0.33-0.54)	0.72(0.62-0.8)	0.41(0.24-0.59)
Worry about the future	0.57(0.5-0.64)	0.57(0.49-0.65)	0.52(0.35-0.65)	0.33(0.19-0.46)
Sleep problems	0.44(0.34-0.52)	0.26(0.1-0.34)	0.58(0.42-0.7)	0.35(0.22-0.47)

The reliability median has been shown in Table 2.

Table 2. Median of the reliability of Cronbach's alphas per European Federation of Psychologists'

Associations guidelines.

Stability	Number of scales	M*
No information given	-	0
$r < 0.60$	4	1
$0.60 \leq r < 0.70$	2	2
$0.70 \leq r < 0.80$	3	3
$r \geq 0.80$	0	4

* M = median stability

Premorbid clinical characteristics of the sample

Concerning premorbid traits as measured by the PCT-Q, ED sufferers scored significantly higher than HCs on HA, social phobia, alexithymia, IA, and food obsessions (Table 2).

Table 2. Premorbid symptoms: comparison of eating disorder patients and healthy controls with the Premorbid Childhood Traits Questionnaire.

	Healthy controls (n=286)	Eating disorder patients (n=94)	Test statistics		Effect sizes
	Mean(SD)	Mean(SD)	t	p	Cohen's d
Premorbid Childhood Traits Questionnaire					
Harm avoidance	4.61(2.18)	6.65(2.13)	-7.944**	<0.001	.94
Reward sensitivity	3.77(1.08)	4.01(1.11)	-1.861	0.063	.22
Social phobia	1.42(1.48)	2.82(1.61)	-7.788**	<0.001	.93
Alexithymia	1.66(1.65)	3.91(2.49)	-9.976**	<0.001	1.19
Achievement drive	2.33(1.08)	2.38(1.15)	-0.387	0.699	.05
Interoceptive awareness	2.12(1.66)	4.07(2.47)	-8.683**	<0.001	1.03
Food obsessions	0.61(0.87)	1.82(1.62)	-9.207**	<0.001	1.1
Worry about the future	4.18(1.53)	3.42(1.59)	4.137**	<0.001	.49
Sleep problems	3.39(0.77)	2.85(1.19)	5.086**	<0.001	.61

** p < .001 (two-tailed)

Cohen's d effect sizes: negligible ($\geq -.15$ and $< .15$), small ($\geq .15$ and $< .40$), medium ($\geq .40$ and $< .75$), large ($\geq .75$ and < 1.10), very large (≥ 1.10 and < 1.45), and huge (> 1.45).

As shown in Table 3, HCs and patients with EDs significantly differed on all CHIRP scores.

Table 3. Premorbid symptoms: comparison of eating disorder patients and healthy controls with the Childhood Retrospective Perfectionism Questionnaire (CHIRP).

	Healthy controls (n=286)	Eating disorder patients (n=94)	Test statistics		Effect size
	Mean(SD)	Mean(SD)	t	p	Cohen's d
CHIRP					
Global perfectionism	1.47(1.45)	3.32(2.17)	-9.126**	<.001	1.12
Inflexibility	2.31(1.19)	3.49(1.41)	-7.768**	<.001	.95
Need for order and symmetry	0.52(0.85)	1.61(1.49)	-8.475**	<.001	1.05

** p < .001 (two-tailed)

Cohen's d effect sizes: negligible ($\geq -.15$ and $< .15$), small ($\geq .15$ and $< .40$), medium ($\geq .40$ and $< .75$), large ($\geq .75$ and < 1.10), very large (≥ 1.10 and < 1.45), and huge (> 1.45).

Correlations of the PCT-Q and eating and general psychopathology

The PCT-Q showed significant correlations with all the CHIRP scales (see Table 4), and with the vast majority of the TCI (see Table 4), EDI-2 (the three “core” subscales have been considered; see Table 5), and FROST sub-dimensions (see Table 5).

Table 4. Correlations between PCT-Q and the Childhood Retrospective Perfectionism Questionnaire (CHIRP) and the Temperament and Character Inventory (TCI).

	CHIRP						TCI			
	GP	I	NOS	HA	NS	RD	P	SD	C	ST
HA	.450**	.454**	.300**	-.1986**	.4108**	.0109	.065	-.3439**	-.063	.084
RS	.1658**	.1216*	.194**	.112*	-.0988	.111*	.044	-.100	-.1326*	.1326*
SOCPHOB	.3766**	.404**	.262**	-.165**	.391**	-.1108*	.060	-.3298**	-.1879**	.0104
ALE	.415**	.4397**	.411**	-.043	.3326**	-.1547**	-.0769	-.4398**	-.202**	.065
ACH	.272**	.253**	.205**	-.024	-.113*	-.074	.1876**	.103*	-.044	-.034
IA	.5497**	.424**	.442**	.045	.2437**	-.014	.090	-.300**	-.182**	.2108**
FOOD	.480**	.390**	.4326**	-.044	.2546**	-.123*	.0327	-.3109**	-.255**	.0219
FUT	-.1219*	-.112*	-.234**	-.2106**	-.054	.080	-.035	.3106**	.202**	-.175**
SLEEP	-.314**	-.2109**	-.3436**	-.0103	-.201**	.113*	.022	.282**	.1768**	-.042

* p < 0.05 (two-tailed); ** p < 0.01 (two-tailed)

Legend: HA: harm avoidance; RS: reward sensitivity; SOCPHOB: social phobic aspects; ALE: alexithymia; ACH: achievement drive; FOOD: food obsessions; FUT: worry about the future; SLEEP: sleep problems; GP: global perfectionism; I: inflexibility; NOS: need of order and symmetry; NS: novelty seeking; P: persistence; SD: self-directedness; C: cooperativeness; ST: self-transcendence.

Table 6. Correlations between PCT-Q and the Eating Disorders Inventory-2 (EDI-2) and the Frost Multidimensional Perfectionism Scale (FROST).

	EDI-2	FROST
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	DT	B	BD	CM	PS	PE	PC	D	O	TOT
HA	.401**	.3107**	.350**	.4768**	.2986**	.204**	.334**	.4659**	-.0216	.4219**
RS	.1549**	.0219	.085	.1657**	.162**	.0658	.100	.082	.2327**	.2216**
SOCPHOB	.420**	.2789**	.351**	.433**	.254**	.194**	.312**	.4216**	.024	.3986**
ALE	.465**	.313**	.4396**	.451**	.2196**	.110*	.384**	.4769**	.0108	.381**
ACH	.043	-.0106	-.0101	.113*	.374**	.194**	-.053	-.025	.200**	.202**
IA	.414**	.281**	.345**	.411**	.3327**	.1547**	.322**	.401**	.1219*	.4438**
FOOD	.4218**	.292**	.374**	.3989**	.245**	.1098	.3436**	.3769**	.153**	.403**
FUT	-.211**	-.133**	-.1987**	-.2197**	-.012	.011	-.220**	-.192**	.0106	-.154**
SLEEP	-.343**	-.281**	-.284**	-.3108**	-.160**	-.104*	-.2437**	-.3108**	-.0436	-.285**

* p< 0.05 (two-tailed); ** p< 0.01 (two-tailed)

Legend: HA: harm avoidance; RS: reward sensitivity; SOCPHOB: social phobic aspects; ALE: alexithymia; ACH: achievement drive; FOOD: food obsessions; FUT: worry about the future; SLEEP: sleep problems; DT: drive for thinness; B: bulimia; BD: body dissatisfaction; CM: concern over mistakes; PS: personal standards; PE: parental expectations; D: doubt about actions; O: organization; TOT: total score.

Discussion

A growing body of evidence showed that certain personality and anxiety traits represent predisposing factors that precede the onset of an ED and usually appear already in childhood [3,35]. Nonetheless, such aspects are understudied also because of the lack of instruments able to systematically investigate them. In order to bridge this gap in literature we developed a novel

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4 self-report questionnaire, the Premorbid Childhood Traits Questionnaire (PCT-Q), (fully
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6 available in the Tables S1-S4) investigating premorbid traits in patients with EDs.
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10 The 37-item final version of the PCT-Q was found to capture premorbid harm avoidance,
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12 social phobia, alexithymia, interoceptive awareness, and food obsessions. Importantly, inter-rater
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14 reliability was found to be good, corroborating patients' recall of their childhood symptoms.
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16 Moreover, the PCT-Q was highly correlated with measures of premorbid and current dimensions.
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18 Also in this light, the psychometric properties of this novel questionnaire appeared to be
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20 satisfactory. It is noteworthy that Cohen's k values indicate a fair agreement between probands
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22 and informants' versions. This is an expected finding since some items of the PCT-Q refer to
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24 internal states and feelings that are difficult to fully identify from an observer standpoint.
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26 Furthermore, part of the sample could be confounded by alexithymic individuals who tend to
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28 poorly identify and express emotions [36] in turn further hampering statistical agreement.
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35 Our findings are consistent with those provided by the CHIRP [25] not only because both
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37 measures found patients as more prone than HCs to report the presence of ED-related traits in
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39 patients' early childhood, but also because inter-rater reliability scores were similar and the two
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41 questionnaires were found as highly correlated to each other. In fact, the inter-rater reliability
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43 values ranged from .28 to .43 and from .22 to .41 for CHIRP [25] and PCT-Q, respectively.
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48 Some interesting traits have been identified by the PCT-Q. HA has strong
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50 neurobiological underpinnings [37,38] and it has been clinically observed and reported to be
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52 heightened after recovery from EDs thus providing indirect support to its possible premorbid
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54 alteration [35]. The questionnaire appears to effectively capture premorbid HA and preliminary
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56 data showed that this trait effectively differs between ED individuals and HCs. With respect to
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58 anxiety elements in EDs, the questionnaire identified also childhood social phobia. Anxiety
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4 disorders are highly comorbid with EDs [39] and tend to predate the onset of EDs in a substantial
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6 proportion of cases [40,41]. Social phobia is one of the most common anxiety disorders
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8 diagnosed before the onset of the ED [35] and several lines of research suggest anxiety to persist
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10 after recovery [35,42] so our data seem to be in line with current literature.
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15 IA is known to be altered in those affected by an ED [20,37]. Although such alteration is
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17 known to be a relevant factor [37] it remains unclear as to whether it could be a premorbid
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19 alteration or not. The questionnaire was found to capture this construct and pilot data showed
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21 interesting childhood differences between those with an ED and HCs. Also, in the ongoing
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23 debate on shared risk factors between EDs and other major psychiatric diagnoses (e.g.,
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25 depressive disorders) [43], IA might have a role as a specific childhood alteration of those who
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27 will develop eating disturbances. However, only longitudinal data and larger sample could
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29 confirm this research hypothesis.
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35 Broadly speaking, disturbances of IA may facilitate the lack of integration of basic bodily
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37 signals and alexithymia, namely the difficulty at recognizing and labelling emotions, hallmark of
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39 full-blown EDs [20,37]. From this standpoint, it is of interest that the PCT-Q captured
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41 alexithymia as present already in childhood. Difficulties in recognizing and managing emotions
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43 are common in EDs [36]; however, it is a common clinical experience to see that these elements
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45 often characterize patients with ED even before the onset of the illness. Notwithstanding, data on
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47 childhood alexithymia are lacking so this questionnaire could be of help in gathering data in this
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49 regard.
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55 The questionnaire identified also childhood food obsessions i.e., persistent and intrusive
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57 thoughts about food with relevant treatment implications in case of AN [44]. Obsessive
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59 compulsive disorder in childhood has been found to negatively impact on AN [2]; however, the
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4 relationship between specific food obsessions and ED onset is currently understudied. Only
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6 longitudinal study conducted on large samples could answer this research question; however, the
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8 PCT-Q was found to be a reliable measure of such aspects thus potentially informing future
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10 research on this issue.
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14 Reward sensitivity, achievement drive, worry about the future, and sleep problems were
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16 each below the reliability threshold set at 0.6 and hence discarded from the final version of the
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18 PCT-Q. Also, they resulted as not correlated with other premorbid and/or current traits as much
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20 as other PCT-Q dimensions did. It is possible that these items were not worded accurately
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22 enough or that the construct that emerged from the focus groups did not generalize to all
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24 affected individuals. In contrast to our a priori hypothesis, the questionnaire failed to effectively
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26 capture reward sensitivity. Perhaps, reward sensitivity, as well as achievement drive (i.e., the
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28 attempt to excel in all activities) - although the latter is a more debated aspect [45] - could benefit
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30 from a more homogeneous sample; in fact, restricting and binge-purging variants may lead to
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32 mixed results given their well-known differences with respect to persistence, reward, and
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34 impulse regulation [17,21,22]. Concerning worry about the future, potentially related to the fear
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36 of uncertainty found in both AN and BN [36,46], it resulted as weakly distinguishing HC and
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38 patients; in fact, the former group described greater anxiety than patients during childhood. On
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40 one hand the items of this scale may benefit from being reworded but on the other hand this
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42 dimension could be too broad to be fully predictive by asking relatively few questions. Finally,
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44 sleep problems were not deeply investigated (i.e., 4 items) and could be shared by a variety of
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46 mental and neurological disorders [47,48] although their predictive value has not been
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48 investigated. Also, some features (e.g., sleep terror) could be frequently found also in healthy
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4 individuals without any relevant repercussions on their mental health; in fact, HCs scored high
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6 on this scale as well.
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10 In closing, the PCT-Q was found to identify premorbid traits of HA, social phobia,
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12 alexithymia, IA, and food obsessions. This questionnaire could entail several advantages in both
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14 research and clinical settings. In fact, the self-report format makes it quick and easy to
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16 administer, and premorbid data may be used in order to not only individualize treatments but also
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18 plan prevention strategies. However, some limitations should be acknowledged: Cronbach's
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20 alphas levels were not high as well as the informant rate, test-retest data were lacking, the sample
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22 size was not very large, and the back-translation from English to Italian could have slightly
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24 modified some items of the questionnaire. Furthermore, recall bias could not be ruled out given
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26 the retrospective design of this study. That said, future research may want to deepen the
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28 psychometrics of the PCT-Q (e.g., exploratory factor analysis) and check the prognostic value of
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30 these data also comparing different mental illnesses; finally, it would be of interest to compare
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32 adolescent and adult samples in order to minimize completers' memory bias and verify these
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34 findings.
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4 **Data availability**
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7 The datasets generated during and/or analyzed during the current study are available from
8 the corresponding author on reasonable request.
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12 **Compliance with Ethical Standards**
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16 **Conflict of Interest**
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19 On behalf of all authors, the corresponding author states that there is no conflict of
20 interest.
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25 **Ethical approval**
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28 All procedures performed in studies involving human participants were in accordance
29 with the ethical standards of the institutional and/or national research committee and with the
30 1964 Helsinki declaration and its later amendments or comparable ethical standards.
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36 **Informed consent**
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39 Informed consent was obtained from all individual participants included in the study.
40

41 **Funding**
42

43 This is unfunded research.
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Table S1 – English Premorbid Childhood Traits Questionnaire (PCT-Q) - child-proband version

Permission is given for the questionnaire to be used but it should not be modified without written permission from the authors.

Name_____

Date_____

Please think back to the time when you were a child, **up to the age of 10 years**. Then judge if the following behaviors described you at that time.

However, only judge if a behavior was present if you:

- EITHER took longer than others doing things because of attention to detail or high standards and if in your judgment this interfered with other activities (e.g. leisure time, school or hobbies)
- OR this behavior was so extreme that other people (e.g. siblings, relatives, friends, teachers) usually commented on it.

	Yes	No
1. Did you avoid situations in order not to make any mistake?		
2. Did you feel anxious in social situations (e.g., birthday parties, playing with friends)?		

3. *When angry or upset, could you explain why?		
4. Were you sensitive to seams touching you?		
5. Did you avoid eating when particularly stressed/worried?		
6. Did you alter your breath to reduce tension (e.g., holding, slowing or speeding it up)?		
7. Did you have recurrent stomach aches/abdominal pain (e.g., on a monthly basis) that doctors did not understand?		
8. Were you more sensitive than your peers to criticism, rejection, and comments?		
9. Were you sensitive to tags (e.g., in clothing)?		
10. *Could you describe your feelings easily?		
11. Did you feel tense and worried when you had to do something unusual?		
12. At school, did you feel more shy than your friends/classmates?		
13. Were you willing to do things to please someone else (e.g., volunteer to do something to please others even if you did not want to do it)?		
14. Were you usually confused about sensations in your body?		
15. Were you uncomfortable having clothes touch you in various areas of your body (e.g., waist and thighs)?		
16. *Were you self-confident and sure of yourself in the majority of social situations?		
17. Were your eating habits different from your peers (e.g., stopping eating when someone else touched your food or doing unusual mixtures of certain foods)?		

18. Did you hurt yourself (e.g., superficial scratches) as a means of being aware of your body and eventually reduce tension?		
19. Did you usually avoid social situations (e.g., birthday parties, playing with friends)?		
20. Did you cry or laugh without being able to explain why?		
21. Were you a picky eater? E.g. did you have specific food choices or tend to eat the same food?		
22. Did you feel that your emotions/mood changed very quickly?		
23. Did you avoid meeting possible new friends because you lacked confidence with people you did not know?		
24. Did you pay particular attention to body sensations (e.g., pounding heartbeats)?		
25. *Could you explain with words your feelings or internal states?		
26. Did you feel bloated after a small meal?		
27. Did you please others as a means of avoiding conflicts?		
28. Did you feel anxious or irritable after eating?		
29. Was touch soothing to you (e.g., holding soft dolls, touching your ears, sucking your thumb)?		
30. In social situations (e.g., while playing with other kids) were you afraid of being watched or judged by others?		
31. Did you have recurrent migraine or headaches (e.g., on a monthly basis) that doctors did not understand?		
32. Were you more sensitive than your peers to pain?		

33. Did you need extra rest or support to recover from minor illnesses or stressful situations?		
34. Did you prefer to play alone rather than with others?		
35. Were you more sensitive than your peers to the cold?		
36. Did you want food to be cut in a certain way or presented in a certain order?		
37. If offered a reward for your efforts, did you tend to think that you did not deserve it?		

Scoring instructions:

In order to obtain the scores of each subscale please sum the following items:

- Harm avoidance: 1,8,11,13,16,23,27,33,37
- Alexithymia: 3,7,10,14,20,22,25,31
- Interoceptive awareness: 4,6,9,15,18,24,26,29,32,35
- Social phobia: 2,12,19,30,34
- Food-related obsessions: 5,17,21,28,36

Items with * should be reverse scored

Table S2 – English Premorbid Childhood Traits Questionnaire (PCT-Q) - parent-informant version

Permission is given for the questionnaire to be used but it should not be modified without written permission from the authors.

Child’s name _____

Completed by _____

Date _____

In the following questions we are interested in certain behaviors that may have been relevant to your child **up to the age of 10 years**. We ask you to only judge a behavior as being present in your child if they:

- EITHER took longer than others doing things because of attention to detail or high standards and if in your judgment this interfered with other activities (e.g. leisure time, school or hobbies)
- OR this behavior was usually commented by other people (e.g. siblings, relatives, friends, teachers).

Yes No

1. Did your child avoid situations in order not to make any mistake?		
2. Did your child feel anxious in social situations (e.g., birthday parties, playing with friends)?		
3. *When angry or upset, could your child explain why?		

4. Was your child sensitive to seams touching them?		
5. Did your child avoid eating when particularly stressed or worried?		
6. Did your child alter their breath to reduce tension (e.g., holding, slowing or speeding it up)?		
7. Did your child have recurrent stomach aches/abdominal pain (e.g., on a monthly basis) that doctors did not understand?		
8. Was your child more sensitive than their peers to criticism, rejection, and comments?		
9. Was your child sensitive to tags (e.g., in clothing)?		
10. *Could your child describe their feelings easily?		
11. Did your child feel tense and worried when they had to do something unusual?		
12. At school, did your child feel more shy than their friends/classmates?		
13. Was your child willing to do things to please someone else (e.g. volunteer to do something to please others even if they did not want to do it)?		
14. Was your child usually confused about sensations in their body?		
15. Was your child uncomfortable having clothes touch them in various areas of their body (e.g., waist and thighs)?		
16. *Was your child self-confident and sure of themselves in the majority of social situations?		

17. Were your child's eating habits different from their peers (e.g., stopping eating when someone else touched their food or doing unusual mixture of certain foods)?		
18. Did your child hurt themselves (e.g., superficial scratches) as a means of being aware of their body and eventually reduce tension?		
19. Did your child usually avoid social situations (e.g., birthday parties, playing with friends)?		
20. Did your child cry or laugh without being able to explain why?		
21. Was your child a picky eater? E.g. did they have specific food choices/tend to eat the same food?		
22. Did your child feel that their emotions/mood changed very quickly?		
23. Did your child avoid meeting possible new friends because they lacked confidence with people they did not know?		
24. Did your child pay particular attention to body sensations (i.e. pounding heartbeats)?		
25. *Could your child explain with words their feelings or internal states?		
26. Did your child feel bloated after a small meal?		
27. Did your child please others as a means of avoiding conflicts?		
28. Did your child feel anxious or irritable after eating?		
29. Was touch soothing to your child (e.g., holding soft dolls, touching their ears, sucking their thumb)?		

30. In social situations (e.g., while playing with other kids) was your child afraid of being watched or judged by others?		
31. Did your child have recurrent migraine or headaches (e.g., on a monthly basis) that doctors did not understand?		
32. Was your child more sensitive than their peers to pain?		
33. Did your child need extra rest or support to recover from minor illnesses or stressful situations?		
34. Did your child prefer to play alone rather than with others?		
35. Was your child more sensitive than their peers to the cold?		
36. Did your child want the food to be cut in a certain way or presented in a certain order?		
37. If offered a reward for their efforts, did your child tend to think that she/he did not deserve it?		

Scoring instructions:

In order to obtain the scores of each subscale please sum the following items:

- Harm avoidance: 1,8,11,13,16,23,27,33,37
- Alexithymia: 3,7,10,14,20,22,25,31
- Interoceptive awareness: 4,6,9,15,18,24,26,29,32,35
- Social phobia: 2,12,19,30,34
- Food-related obsessions: 5,17,21,28,36

Items with * should be reverse scored

Table S3 – Italian Premorbid Childhood Traits Questionnaire (PCT-Q) – child version

Permission is given for the questionnaire to be used but it should not be modified without written permission from the authors.

NOME E COGNOME _____

DATA _____

Per cortesia, pensi a quando era un/a bambino/a, in particolare **a quando aveva circa 10 anni**, e valuti se i comportamenti elencati qui sotto la descrivono quando era piccolo/a.

Valuti un comportamento come presente solo se:

- Impiegava più tempo nel fare le cose per via della sua attenzione ai dettagli o perchè aveva standard elevati e se a suo giudizio questo interferiva con altre attività (es. tempo libero, attività scolastiche o hobbies)
- Oppure se questo comportamento era così estremo da venire commentato dall'esterno (ad es. fratelli/sorelle, parenti, amici, insegnanti).

	Sì	No
1. Evitava certe situazioni pur di non fare errori?		
2. Si sentiva ansioso/a in situazioni sociali (es. feste di compleanno, giochi con gli amici)?		
3. *Quando si sentiva arrabbiato/a o agitato/a, era in grado di spiegarne il motivo?		
4. Notava o era infastidito/a dalla sensazione delle cuciture sulla pelle?		
5. Tendeva a non mangiare quando particolarmente stressato/a o preoccupato/a?		

6. Le capitava di modificare il respiro per ridurre la tensione (es. trattenere, rallentare o velocizzare il respiro)?		
7. Aveva dolori addominali o bruciori di stomaco (es. mensilmente) che non avevano una spiegazione medica?		
8. Era più sensibile dei suoi coetanei/gruppo di amici alle critiche, ai rifiuti e ai commenti?		
9. Era sensibile alle etichette nei vestiti (es. le davano fastidio/doveva rimuoverle)?		
10. *Era in grado di descrivere con facilità i propri sentimenti?		
11. Si sentiva in tensione e preoccupato/a quando doveva fare qualcosa di insolito?		
12. A scuola era più timido/a dei suoi compagni/amici?		
13. Le capitava di voler fare qualcosa per accontentare qualcun altro (es. offrirsi volontario - seppur contro voglia - per accontentare gli altri)?		
14. Era confuso/a riguardo alle sensazioni del suo corpo?		
15. Le dava fastidio il contatto con gli indumenti in alcune parti del suo corpo (es. vita e cosce)?		
16. *Era sicuro/a di sè nella maggior parte delle situazioni sociali?		
17. Le sue abitudini alimentari erano diverse da quelle dei suoi coetanei/gruppo di amici (es. smettere di mangiare se qualcuno toccava il suo cibo o fare mescolare alcuni cibi in modo inusuale)?		
18. Si procurava del dolore (es. graffi superficiali) come modo per sentire il suo corpo ed eventualmente ridurre la tensione?		
19. Di solito evitava situazioni sociali (es. feste di compleanno, giochi con amici)?		

20. Le capitava di piangere o ridere senza riuscire a spiegarne la ragione?		
21. Era schizzinoso/a riguardo al cibo? Ad esempio, aveva preferenze specifiche per alcuni cibi o tendeva a mangiare sempre gli stessi alimenti?		
22. Aveva la sensazione che le sue emozioni/sensazioni cambiassero molto velocemente?		
23. Evitava di incontrare possibili nuovi amici perchè non aveva fiducia in persone che non conosceva?		
24. Faceva particolare attenzione alle sensazioni corporee (es. batticuore)?		
25. *Riusciva a spiegare a parole i suoi sentimenti o stati interiori?		
26. Si sentiva pieno/a dopo i pasti, anche se piccoli?		
27. Tendeva ad accontentare gli altri per evitare conflitti?		
28. Si sentiva ansioso/a o irritabile dopo i pasti?		
29. Si tranquillizzava se veniva toccato/a o accarezzato/a (es. stringere una bambola, toccarsi le orecchie, succhiarsi il pollice)?		
30. In situazioni sociali (es. mentre giocava con altri bimbi) aveva paura di essere guardato/a o giudicato/a dagli altri?		
31. Aveva ricorrenti emicranie o mal di testa (es. mensilmente) che non avevano una spiegazione medica?		
32. Era più sensibile dei suoi coetanei/gruppo di amici al dolore?		
33. Aveva necessità di lungo riposo per riprendersi da malattie o situazioni stressanti?		
34. Preferiva giocare da solo/a invece che con altri bimbi?		
35. Era più sensibile dei suoi coetanei/gruppo di amici al freddo?		

36. Era importante per lei che il cibo fosse tagliato in un certo modo o presentato in un determinato ordine?		
37. Se le veniva offerta una certa gratificazione per i suoi sforzi le capitava di pensare che non la meritava?		

Istruzioni per la correzione:

Per ottenere i punteggi di ciascuna sottoscala per cortesia si sommino i seguenti items:

- Evitamento del danno: 1,8,11,13,16,23,27,33,37
- Alessitimia: 3,7,10,14,20,22,25,31
- Consapevolezza enterocettiva: 4,6,9,15,18,24,26,29,32,35
- Fobia sociale: 2,12,19,30,34
- Ossessioni relative al cibo: 5,17,21,28,36

Gli items contrassegnati con * devono essere conteggiati al contrario (es.: sì=0)

Table S4 – Italian Premorbid Childhood Traits Questionnaire (PCT-Q) - parent-informant version

Permission is given for the questionnaire to be used but it should not be modified without written permission from the authors.

NOME E COGNOME _____

NOME E COGNOME DEL/LA FIGLIO/A _____

DATA _____

Le poniamo le seguenti domande perchè siamo interessati ad alcuni comportamenti che suo/a figlio/a potrebbe aver avuto quando era un/a **bambino/a di circa 10 anni**. Le chiediamo di valutare un comportamento come presente solo se:

- suo/a figlio/a impiegava più tempo nel fare le cose per via della sua attenzione ai dettagli o perchè aveva standard elevati e se a suo giudizio questo interferiva con altre attività (es. tempo libero, attività scolastiche o hobbies)
- oppure se questo comportamento era così estremo da venire commentato dall'esterno (ad es. fratelli/sorelle, parenti, amici, insegnanti).

Sì No

1. Suo/a figlio/a evitava certe situazioni pur di non fare errori?		
2. Suo/a figlio/a si sentiva ansioso/a in situazioni sociali (es. feste di compleanno, giochi con gli amici)?		

3. *Quando suo/a figlio/a si sentiva arrabbiato/a o agitato/a, era in grado di spiegarne il motivo?		
4. Suo/a figlio/a notava o era infastidito/a dalla sensazione delle cuciture sulla pelle?		
5. Suo/a figlio/a tendeva a non mangiare quando particolarmente stressato/a o preoccupato/a?		
6. A suo/a figlio/a capitava di modificare il respiro per ridurre la tensione (es. trattenere, rallentare o velocizzare il respiro)?		
7. Suo/a figlio/a aveva dolori addominali o bruciori di stomaco (es. mensilmente) che non avevano una spiegazione medica?		
8. Suo/a figlio/a era più sensibile dei suoi coetanei/gruppo di amici alle critiche, ai rifiuti e ai commenti?		
9. Suo/a figlio/a era sensibile alle etichette nei vestiti (es. le davano fastidio/doveva rimuoverle)?		
10. *Suo/a figlio/a era in grado di descrivere con facilità i propri sentimenti?		
11. Suo/a figlio/a si sentiva in tensione e preoccupato/a quando doveva fare qualcosa di insolito?		
12. Suo/a figlio/a a scuola era più timido/a dei suoi compagni/amici?		
13. A suo/a figlio/a capitava di voler fare qualcosa per accontentare qualcun altro (es. offrirsi volontario - seppur contro voglia - per accontentare gli altri)?		

14. Suo/a figlio/a era confuso/a riguardo alle sensazioni del suo corpo?		
15. A suo/a figlio/a dava fastidio il contatto con gli indumenti in alcune parti del suo corpo (es. vita e cosce)?		
16. *Suo/a figlio/a era sicuro/a di sè nella maggior parte delle situazioni sociali?		
17. Le abitudini alimentari di suo/a figlio/a erano diverse da quelle dei suoi coetanei/gruppo di amici (es. smettere di mangiare se qualcuno toccava il suo cibo o fare mescolare alcuni cibi in modo inusuale)?		
18. Suo/a figlio/a si procurava del dolore (es. graffi superficiali) come modo per sentire il suo corpo ed eventualmente ridurre la tensione?		
19. Suo/a figlio/a di solito evitava situazioni sociali (es. feste di compleanno, giochi con amici)?		
20. A suo/a figlio/a capitava di piangere o ridere senza riuscire a spiegarne la ragione?		
21. Suo/a figlio/a era schizzinoso/a riguardo al cibo? Ad esempio, aveva preferenze specifiche per alcuni cibi o tendeva a mangiare sempre gli stessi alimenti?		
22. Suo/a figlio/a aveva la sensazione che le sue emozioni/sensazioni cambiassero molto velocemente?		
23. Suo/a figlio/a evitava di incontrare possibili nuovi amici perchè non aveva fiducia in persone che non conosceva?		

24. Suo/a figlio/a faceva particolare attenzione alle sensazioni corporee (es. batticuore)?		
25. *Suo/a figlio/a riusciva a spiegare a parole i suoi sentimenti o stati interiori?		
26. Suo/a figlio/a si sentiva pieno/a dopo i pasti, anche se piccoli?		
27. Suo/a figlio/a tendeva ad accontentare gli altri per evitare conflitti?		
28. Suo/a figlio/a si sentiva ansioso/a o irritabile dopo i pasti?		
29. Suo/a figlio/a si tranquillizzava se veniva toccato/a o accarezzato/a (es. stringere una bambola, toccarsi le orecchie, succhiarsi il pollice)?		
30. In situazioni sociali (es. mentre giocava con altri bimbi) suo/a figlio/a aveva paura di essere guardato/a o giudicato/a dagli altri?		
31. Suo/a figlio/a aveva ricorrenti emicranie o mal di testa (es. mensilmente) che non avevano una spiegazione medica?		
32. Suo/a figlio/a era più sensibile dei suoi coetanei/gruppo di amici al dolore?		
33. Suo/a figlio/a aveva necessità di lungo riposo per riprendersi da malattie o situazioni stressanti?		
34. Suo/a figlio/a preferiva giocare da solo/a invece che con altri bimbi?		
35. Suo/a figlio/a era più sensibile dei suoi coetanei/gruppo di amici al freddo?		
36. Era importante per suo/a figlio/a che il cibo fosse tagliato in un certo modo o presentato in un determinato ordine?		

<p>37. Se a suo/a figlio/a veniva offerta una certa gratificazione per i suoi sforzi gli/le capitava di pensare che non la meritava?</p>		
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Istruzioni per la correzione:

Per ottenere i punteggi di ciascuna sottoscala per cortesia si sommino i seguenti items:

- Evitamento del danno: 1,8,11,13,16,23,27,33,37
- Alessitimia: 3,7,10,14,20,22,25,31
- Consapevolezza enterocettiva: 4,6,9,15,18,24,26,29,32,35
- Fobia sociale: 2,12,19,30,34
- Ossessioni relative al cibo: 5,17,21,28,36

Gli items contrassegnati con * devono essere conteggiati al contrario (es.: sì=0)