**Dispositional Threat Sensitivity as a Liability for Fear-Related Pathologies:**

**Evidence from a Child-Aged Twin Sample**

***Supplemental Material***

*Contents*

**Supplemental Method:** Descriptions of Study Measures

 p. 2

**Supplemental Table A:** Means/*SD*s and Reliability Coefficients for Study Measures

 p. 6

**Supplemental Table B:** Factor Loadings for Confirmatory Factor Analytic (CFA) Models of Symptom Scale Measures

p. 7

**Supplemental References**

p. 8

**Supplemental Method:**

**Descriptions of Study Measures**

As noted in the Method section of the main article, measures administered in the current study included the 20-item Trait Fear Inventory (TF-20; Kramer et al., 2020) along with various other measures, encompassing both *child self-report inventories* (Revised Fear Survey Schedule for Children [FSSC-R], Screen for Child Anxiety Related Disorders [SCARED], Behavioral Inhibition System/Behavioral Activation System [BIS/BAS] scales, Child Anxiety Sensitivity Index [CASI]), Affective Reactivity Index [ARI], Short Mood and Feelings Questionnaire [SMFQ], Junior Eysenck Personality Questionnaire [JEPQ], and *parent-report inventories* (i.e., Behavioral Inhibition Questionnaire [BIQ], Inventory of Callous-Unemotional Traits [ICU], and Child Behavior Checklist [CBCL], along with parent-rating versions of the SCARED, SMFQ, and ARI).

A description of the TF-20 is provided in the main article; summary descriptions of the other measures are as follows:

***Revised Fear Survey Schedule for Children (FSSC-R; Ollendick, 1983).*** The FSS is a widely used self-report measure of experiential fear in relation to various situations and stimuli. The child-report version (FSSC-R) contains 80 items that assess common childhood fears. Each item is rated on a 3-point scale corresponding to 1= none; 2= some; 3= a lot. FSSC-R total scores were computed as the sum of all individual item scores.

***Screen for Childhood Anxiety Related Emotional Disorders (SCARED; Birmaher et al., 1999).*** The SCARED was designed to index the severity of common childhood anxiety symptoms. It was administered in both child self-report and parent-rating forms, each containing 41 items rated on a 0-2 scale (0 = not true or hardly ever true; 1 = somewhat true or sometimes true; 2 = very true or often true). Both forms yielded a total score reflecting the sum of all items, along with scores on 5 specific symptom scales: Panic Disorder/Somatic Symptoms (7 items), Separation Anxiety (5 items), Social Anxiety Disorder (8 items), and Generalized Anxiety Disorder (9 items).

***BIS/BAS Scales (Carver & White, 1994).*** The BIS/BAS Scales were developed to assess individual differences in broad motivational systems theorized to direct behavior: the behavioral inhibition system (BIS) and the behavioral activation system (BAS). The BIS/BAS inventory contains 24 items, each rated on a 4-point Likert-type scale with response options of ‘very true for me’, ‘somewhat true of me’, ‘somewhat false for me’, and ‘very false for me’, coded 1 to 4, respectively. The items are grouped into a 7-item BIS scale, and three BAS subscales comprising 13 items – Drive (4 items), Fun Seeking (4 items), and Reward Responsiveness (5 items) – with the remaining 4 items being non-scored “filler” items.

***Child Anxiety Sensitivity Index (CASI; Silverman et al.*, *1991).*** The CASI is an 18-item self-report inventory that assesses fearful feelings in relation to common sensations of anxiety (e.g., shakiness, faintness, tachycardia). Each item is rated on a 3-point scale, with 1 corresponding to *none,* 2 to *some,* and 3 to *a lot*. Total scores are computed as a simple sum of scores for the 18 items.

***Affective Reactivity Index (ARI; Stringaris et al., 2012).*** The ARI assesses irritability in children in terms of three facets, tapped by 2 items each: (i) threshold for an angry reaction, (ii) frequency of angry feelings/behaviors, and (iii) duration of such feelings/behaviors. Both self-report and parent-rating versions were administered in the current study, with reference to behavior over the past six months. Items are rated using a three-point format of ‘not true’, ‘somewhat true’, and ‘certainly true’, coded as ‘0’, ‘1’, and ‘2’, respectively. Total ARI scores are computed as a sum of the six items and range from 0-12.

***Short Mood and Feelings Questionnaire (SMFQ; Angold et al., 1995).*** The SMFQ is a brief 13-item self-report inventory designed to assess depressive symptoms in children/adolescents over a past two-week timeframe. Its items are completed using a 3-point scale (0 = not true; 1= sometimes true; 2 = true). The SMFQ was administered in both child self-report and parent-rating format for purposes of the current work.

***Junior Eysenck Personality Questionnaire – Neuroticism and Extraversion scales (JEPQ; Eysenck, 1965).*** The JEPQ assesses broad traits of neuroticism, extraversion, and psychoticism in youth aged 7-17 years. Self-report versions of its Neuroticism and Extraversion scales, each comprising 12 items, were administered to twin participants in the current study. Items were answered using a 2-point (true, false) format.

***Behavioral Inhibition Questionnaire (BIQ; Gensthaler et al., 2013).*** The 20-item BIQ is a parent-rating version of a self-report measure developed to retrospectively assess levels of behavioral inhibition, as conceptualized by Kagen and colleagues (e.g., Garcia-Coll, Kagan, & Reznick, 1984), exhibited by individuals during childhood. Its items are rated on a 5-point Likert-type scale (0 = Yes, 1 = more likely Yes, 2 = partly, 3 = more likely Not, 4 = No) and coded such that higher overall scores reflect higher levels of behavioral inhibition (i.e., fearfulness, social shyness, and discomfort with unfamiliarity).

***Inventory of Callous Unemotional Traits (ICU; Kimonis et al., 2008).*** The ICU was developed to assess for affective features of psychopathy, as conceptualized by Frick and colleagues (e.g., Frick & Marsee, 2018), encompassing features of low empathy, guiltlessness, and emotional insensitivity. It was administered as a parent-rating measure in the current study. The ICU comprises 24 items (10 of them reverse-coded), answered using a 4-point scale ranging from 0 (Not at all true) to 3 (Definitely true). Total scores were computed as the simple sums of all items.

***Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001).*** The CBCL is a widely used rating instrument for assessing internalizing and externalizing symptomatology in young individuals ages 6-18. It was completed by parents in the current study for each of their twin children. The CBCL contains 113 items scored on a three-point Likert scale (0 = not true; 1 = sometimes or somewhat true; 2 = often true or very true). Its items are grouped into eight syndrome subscales: Anxious/Depressed, Withdrawn/Depressed, Social Problems, Somatic Complaints, Thought Problems, Attention Problems, Rule-Breaking, and Aggressive-Behavior.

**Supplemental Table A. Means/*SD*s and** **Reliability Coefficients for Study Measures**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Reporter | Measure | Assessment Visit 1 | Assessment Visit 2 | Visit 1 to Visit 2 |
| *N* | Mean(*SD*) | Inter-item Reliability (Cronbach's α) | N | Mean(*SD*) | Inter-item Reliability (Cronbach's α) | Test-retest Reliability(*r*) |
| Child | TF-20 | 748 | 29.4(10.5) | 0.87 | 235 | 28.5(12.1) | 0.91 | 0.81 |
|  | FSSC-R | 773 | 53.9(26.5) | 0.96 | 235 | 47.1(27.5) | 0.96 | 0.83 |
|  | SCARED | 775 | 24.1(11.8) | 0.90 | 235 | 20.7(12.8) | 0.93 | 0.78 |
|  | BIS/BAS-Inhibition | 762 | 9.0(4.11) | 0.77 | 235 | 8.44(4.35) | 0.78 | 0.70 |
|  | CASI | 776 | 10.3(5.96) | 0.84 | 235 | 8.69(6.07) | 0.87 | 0.67 |
|  | ARI | 718 | 3.47(2.98) | 0.82 | 235 | 3.25(3.23) | 0.86 | 0.78 |
|  | SMFQ | 781 | 5.23(4.17) | 0.81 | 235 | 4.98(4.34) | 0.84 | 0.61 |
|  | JEPQ-Neuroticism | 775 | 8.38(4.83) | 0.84 | 235 | 8.16(5.11) | 0.86 | 0.78 |
|  | JEPQ-Extraversion | 775 | 17.3(4.14) | 0.77 | 235 | 17.3(4.69) | 0.83 | 0.78 |
|  | BIS/BAS-Activation | 762 | 19.4(6.09) | 0.80 | 235 | 18.5(6.59) | 0.83 | 0.66 |
| Parent | SCARED | 769 | 12.5(11.0) | 0.94 | 265 | 11.4(11.7) | 0.96 | 0.89 |
|  | BIQ | 767 | 93.1(35.6) | 0.96 | 265 | 90.4(39.1) | 0.97 | 0.90 |
|  | ARI | 722 | 1.76(2.61) | 0.88 | 265 | 1.67(2.48) | 0.87 | 0.75 |
|  | SMFQ | 767 | 1.92(3.07) | 0.85 | 265 | 1.80(3.13) | 0.85 | 0.54 |
|  | ICU | 741 | 17.6(7.59) | 0.82 | 255 | 16.9(7.92) | 0.84 | 0.80 |

*Note*. TF-20=Trait Fear Questionnaire-20 item version; FSSC-R =Fear Survey Schedule for Children Revised; SCARED=Screening for Childhood Anxiety Related Disorders; BIS/BAS=Behavioral Inhibition System/Behavioral Activation System scales; CASI= Childhood Anxiety Sensitivity Index; ARI=Affective Reactivity Index; SMFQ=Short Mood and Feelings Questionnaire; JEPQ =Junior Eysenck Personality Questionnaire; BIQ= Behavioral Inhibition Questionnaire; ICU=Inventory of Callous-Unemotional Traits.

**Supplemental Table B. Factor Loadings for Confirmatory Factor Analytic (CFA) Models of Symptom Scale Measures**

|  |  |  |
| --- | --- | --- |
|  | Model 1 (without TF-20) | Model 2 (TF-20 included) |
| Scale | Factor 1 | Factor 2 | Factor 1 | Factor 2 |
| TF-20 | – | – | **.646** | -.079 |
| FSSCR | **.683**  | – | **.720** | -.027 |
| SCARED | **.831** | – | **.811** | .378 |
| BIS | **.771** | – | **.782** | .197 |
| ARI | – | **.647** | – | **.643** |
| SMFQ | – | **.719** | – | **.711** |
| JEPQ-N | – | **.941** | – | **.949** |

*Note*: Loading values greater than .40 are bolded.

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