**More Extensive Literature Review**

**Child and Adolescent Psychopathology: General and Specific Factors**

Most research on bifactor models of psychopathology has been conducted with children and adolescents (Levin-Aspenson et al., 2021), with most of these studies deriving general, internalizing, and externalizing specific factors; however, there is marked variability in factor composition and the number of specific factors extracted (Lynch et al., 2021). Keiley and colleagues (2003) were among the first to derive a bifactor model of youth mental health symptoms, a decade prior to Caspi et al.’s (2014) seminal paper on a model of general factor of psychopathology. Bifactor models in samples of young children (age < 9) are far less common than those derived in samples from middle childhood and adolescent periods. Although not all studies report loadings on each factor (e.g., Keiley et al., 2003 did not), it is notable that the general factor of psychopathology appears to be indexed predominantly by internalizing/general dysphoria indicators in some studies[[1]](#footnote-1) (e.g., 3-6-year-olds Olino et al., 2014 and Olino et al., 2018 – GAD and depression *DSM*-based symptom scales) and more irritability/dysregulation transitioning to general dysphoria/externalizing behavior in other studies (e.g., McElroy et al., 2018 – mood changes, angry mood, frustrated, stubborn Child Behavior Checklist [CBCL] items in 2-3-year-olds transitioning to general dysphoria/externalizing behavior in 5-8-year-olds, e.g., nervous, sad, impulsive, temper tantrums CBCL items; Newmann et al., 2016 – aggressive behavior & emotional reactivity CBCL scales in 6-8-year-olds). Given the limited availability of studies that reported a bifactor model of psychopathology in younger children (age < 9) and the discrepancy in primary markers of the general factor, it is currently challenging to make specific conclusions about its content in that age group.

Further, the composition of the general psychopathology factor in middle-childhood and into adolescence varies even more extensively given availability of more studies and major differences in assessed content (Levin-Aspenson et al., 2021). In particular, some report that the general factor is defined primarily by the internalizing markers (Afzali et al., 2018, Black et al., 2019, & Carragher et al., 2016 - unhappy, worthless Strengths and Difficulties [SDQ] questionnaire items in 10-13-year-olds; Lahey et al., 2011 MDD & GAD *DSM*-based scales in 9-17-year-olds; Patalay et al., 2015 – downhearted, scared SDQ questionnaire items in11-13-year-olds) while others have found more substantial contributions of externalizing indicators (Castellanos-Ryan et al., 2016 – *DSM*-based ADHD, ODD, and CD diagnoses in 14-year-olds; Clark et al., 2021 & McElroy et al., 2018 – aggressive behavior CBCL items in 9-14-year-olds based on the CBCL items; Hamlat et al., 2019 – inattention, hyperactivity questionnaire scales in 9-17-year-olds; Hankin et al., 2017 & Snyder et al., 2017 – ADHD CBCL & other questionnaire scales in 9-17-year-olds; Murray et al., 2016 - ADHD and aggressive behaviors in 7-14-year-olds; Moore et al., 2020 & Pettersson et al., 2018 – questionnaire items for inattention, impulsivity, and opposition/conduct problems in 9-12-year-olds). Additional studies have reported a combination of externalizing and autism spectrum indicators (e.g., Martel et al., 2017 – significant contributions from the *DSM*-based ADHD and autism spectrum scale in 9-year-olds; Noordhof et al., 2015-aggressive and rule-breaking CBCL scales and makers of autism spectrum in 11-year-olds), and psychotic experiences (Stochl et al., 2015 – delusions & hallucinations in 11-18-year-olds; Laceulle et al., 2015 – thought problems and psychotic experiences in 10-19-year-olds) as the main contributors to the general factor. Although extensive variability of observed indicators creates challenges for identifying patterns within the content of the general factor of psychopathology, results from studies with older children and adolescents indicate presence of more markers of compromised self-regulation (i.e., externalizing symptoms, such as inattention, impulsivity, aggression, rule-breaking) than in younger children.

 Specific psychopathology factors in youth have demonstrated even worse replicability across studies than the general factor. In younger children (age < 9), internalizing specific factor has shown strong loadings from markers of social and specific phobias and panic disorder (Olino et al., 2014; Olino et al., 2018), while others have reported the same factor marked primarily by worried/anxious and sad/withdrawn symptoms (McElroy et al. 2018; Newmann et al., 2016). In contrast, the externalizing specific factor has shown strong loadings from hyperactivity, impulsivity, aggressive and rule-breaking behavior predominantly (Newmann et al., 2016; Olino et al., 2014; Olino et al., 2018). At the same time, McElroy et al. (2018) reported a specific externalizing factor marked predominantly by oppositional/aggressive behavior and an additional specific inattention factor defined by inattention/hyperactivity symptoms.

 A similar pattern of inconsistency with respect to the number of specific factors extracted and their content across studies continues in middle childhood and adolescence. There is extensive evidence of the specific internalizing factor across studies; however, there is some variability in the primary markers of these factors, including mainly indicators of anxiety (e.g., Lahey et al., 2011; Tackett et al., 2013 – specific phobia and agoraphobia; Laceulle et al., 2015 – social anxiety, separation anxiety; Vine et al., 2020 – GAD; Castellanos-Ryan, 2016; Petersson et al., 2018 – OCD, panic attacks, agoraphobia; Haltigan et al., 2019; McElroy et al., 2018; Moore et al., 2020; Patalay et al., 2015 – fearful, worries & somatic complaints; Black et al., 2019 – scared, worried) and some with primary markers of depression (Afzali et al., 2018; Carragher et al., 2016; Murray et al., 2016 - lonely, unhappy, sad, tearful; Newmann et al., 2016; Noordhof et al., 2015 – anxious/depressed, withdrawn/depressed). Further, some have derived additional specific factors that are relevant to the internalizing spectrum: separate but correlated fear and distress factors were derived in a large sample of 9-year-olds at high risk for psychopathology by Martel and colleagues (2021; decision was based on model fit), and an additional specific somatic complaints factor was considered by Clark et al. (2021) in the the Adolescent Brain Cognitive Development (ABCD) Study. The content and the number of specific internalizing factors reported have been significantly influenced by available observed indicators (e.g., lack of a wide range of depression indicators) and constraints placed on the models (e.g., having certain indicators load only on the general factor).

Variability in the number and content of specific externalizing factors reported in the context of bifactor models is even more extensive than what we discussed for the internalizing specific factors. Some studies have derived a single specific externalizing factor with aggressive and rule-breaking behaviors as primary markers (e.g. Lahey et al., 2011; Martel et al., 2017; Tackett et al., 2013; Vine et al., 2020 – ODD & CD; Carragher et al., 2016 – fights, neglects responsibilities; Laceulle et al., 2015 – delinquency and aggression; Newmann et al., 2016; Noordhof et al., 2015 – aggressive, rule-breaking; Black et al., 2019; Patalay et al., 2015 – angry, lose temper), while others, have derived additional specific factors defined primarily by markers of inattention/poor concentration (e.g., Clark et al., 2021; Haltigan et al., 2019; McElroy et al., 2018; Moore et al., 2020; Murray et al., 2016; Petersson et al., 2018), impulsivity (Petersson et al., 2018), and conduct symptoms (e.g., Moore et al., 2020; Murray et al., 2016; Petersson et al., 2018). As a result, there is little consensus in the current literature regarding the composition of the factors. Indeed, although ADHD frequently co-develops with disruptive behavior disorders during childhood and adolescence with 67% of shared variance accounted for by the genetic factors (e.g., Tuvbland et al., 2009), inattentive problems are not considered to be a part of the externalizing spectrum in the Achenbach System of Empirically Based Assessment.

Finally, it is notable that addition of psychotic symptoms as observed indicators does not consistently result in emergence of another specific factor in youth samples (e.g., Laceulle et al., 2015; Laceulle et al., 2019 vs. Afzali et al., 2018; Carragher et al., 2016; Haltigan et al., 2019; Stohl et al., 2014). In particular, in a bifactor model based on multi-informant longitudinal psychopathology data in adolescents derived by Laceulle et al. (2015; 2019), Obsessive Compulsive Disorder, Thought Disorder, and psychotic experiences scales loaded only on the general factor, indicating lack of evidence for a specific psychoticism factor. However, model estimation issues were noted (e.g., Heywood cases), and some of the final model fit indices did not reach the recommended cut-offs. While Laceulle et al. (2015; 2019) did not recover a specific psychoticism factor, several other investigators (Afzali et al., 2018; Carragher et al. 2016; Haltigan et al., 2019; Stohl et al., 2014) selected the best-fitting bifactor model with internalizing, externalizing, and thought disorder (marked primarily by delusions and hallucinations) specific factors in samples of older children and adolescents.

**Adult Psychopathology: General and Specific Factors & Their Correlates**

A bifactor model has also been applied to understanding the structure of psychopathology in adulthood (e.g., most seminal papers by Caspi et al., 2014; Lahey et al., 2012; Lahey et al., 2018), thus, demonstrating its relevance across development. Although the focus of the current study is on child and adolescent psychopathology, it is important to note that the same issues pertaining to the lack of consistency with respect to composition of the general and specific factors observed in youth samples, are also observed in studies with adults. Levin-Aspenson et al. (2021) provide a summary of the extant literature on the composition of the general factor in adults and present their own analyses across three large samples. They concluded that although some common elements of the general factor were observable across the three samples examined, it would be challenging to assume that the same construct was captured by the *p* factor in each sample.

 In particular, Caspi and colleagues (2014) derived a bifactor model including general factor (mania & schizophrenia that were only allowed to load on the general factor, MDD, GAD as primary markers), internalizing (GAD, and fears as primary markers), and externalizing (four dimensions of substance dependence as primary markers) specific factors in the longitudinal Dunedin Study using a set of 10 *DSM*-based disorders that were assessed across ages 18, 21, 26, 32, and 38 years. It is notable that the directionality of the association between internalizing and externalizing factors changed from positive to negative after the addition of the generalfactor. Caspi and colleagues (2014) concluded that the general factor was an index of severity with psychosis being an important marker. Similar composition and interpretation of the general factor were proposed by Lahey et al. (2018) in a sample of young adults; mania and OCD were also allowed to load only on the general factor. A notable difference between child/adolescent and adult bifactor structures of psychopathology is the differentiation of internalizing symptoms into fear and distress in adulthood. In particular, Lahey and colleagues (2012) derived a bifactor model consisting of a general factor (MDD, dysthymia, GAD as primary markers), distress (MDD & dysthymia as primary markers), fear (social & specific phobia), and externalizing (substance use) specific factors in the NESARC data (18-64-year-olds). The fear and distress specific variables were almost always associated with different external validators (e.g., distress was positively associated with depression and suicide attempts, while fear was not; Lahey et al., 2012). Unsurprisingly, the overall structure of psychopathology appears to be more differentiated than in younger age groups (e.g., presence of additional specific factors, including psychoticism, fear, and distress; Capsi et al., 2014; Lahey et al., 2018).

Similar to studies of bifactor models of psychopathology in children and adolescents, external validators are frequently omitted from studies with adults. However, the two seminal studies by Caspi et al. (2014) and Lahey et al. (2012) provide an extensive network of validators for the derived models of psychopathology. In particular, among the risk factors that are the most relevant to the current study, extraversion, was positively associated with the externalizing, negatively associated with the internalizing, and not associated with the general factor (Caspi et al., 2014). At the same time, agreeableness and conscientiousness showed the reverse pattern of associations with the specific factors and a negative association with the general factor (Caspi et al., 2014). Further, general and externalizing specific factors, but not internalizing specific factor, were linked prospectively to alcohol, cannabis, and other drug abuse and dependence (Lahey et al., 2012). Overall, these associations between psychopathology factors, their corresponding risk factors and outcomes are consistent with those reported for youth that we reviewed earlier in the paper.

**Additional Details for Validators**

Table S1 below contains additional details on the measurement of the validators, including response options, number of items, and an example item from each subscale. Table S2 and S3 contain the items that were used in each internalizing and externalizing bundle for child and parent report, respectively.

Table S1

*Additional Details for Validators*

|  |  |  |  |
| --- | --- | --- | --- |
| **Validator** | **Response Formal** | **# of Items** | **Example Item** |
| Activational Control | 1 “Almost always untrue of your child” – 5 Almost always true of your child” | 7 | Has a hard time finishing things on time |
| Fear | 1 “Almost always untrue of your child” – 5 Almost always true of your child” | 6 | Worries about our family when s/he is not with us. |
| Frustration | 1 “Almost always untrue of your child” – 5 Almost always true of your child” | 6 | Hates it when people don’t agree with him/her. |
| High Intensity Pleasure | 1 “Almost always untrue of your child” – 5 Almost always true of your child” | 9 | Wouldn’t want to go on the frightening rides at the fair. |
| Shyness | 1 “Almost always untrue of your child” – 5 Almost always true of your child” | 5 | Is shy. |
| Affiliation | 1 “Almost always untrue of your child” – 5 Almost always true of your child” | 6 | Wants to have close relationships with other people. |
| Attentional Control | 1 “Almost always untrue of your child” – 5 Almost always true of your child” | 6 | Is often in the middle of doing one thing and then goes off to do something else without finishing it. |
| Depressed Mood | 1 “Almost always untrue of your child” – 5 Almost always true of your child” | 5 | Sometimes seems sad even when s/he should be enjoying her/himself like at Christmas, or on a trip. |
| Inhibitory Control | 1 “Almost always untrue of your child” – 5 Almost always true of your child” | 5 | Is usually able to stick with his/her plans and goals. |
| Aggression | 1 “Almost always untrue of your child” – 5 Almost always true of your child” | 7 | Doesn’t criticize others. |
| Reward Response (BAS) | 1 “Strongly disagree” – 5 “Strongly agree” | 6 | Your child does a lot of things for approval. |
| Impulse/Fun Seek (BAS) | 1 “Strongly disagree” – 5 “Strongly agree” | 7 | Your child has difficulty staying focused on his/her school work in the presence of an attractive alternative. |
| Drive (BAS) | 1 “Strongly disagree” – 5 “Strongly agree” | 4 | Your child likes competitive activities. |
| FFFS Fear | 1 “Strongly disagree” – 5 “Strongly agree” | 9 | Your child is a shy person.  |
| BIS-Anxiety | 1 “Strongly disagree” – 5 “Strongly agree” | 15 | Criticism or scolding hurts your child very much. |
| Puberty  | Likert, options vary | 6 male, 7 female | Have you noticed any skin changes, especially pimples? |
| Isolation  | 1 “Not at all” – 5 “All the time” | 6 | Sometimes kids don't want my child to hang out with them.  |
| Fear of Negative Evaluation | 1 “Not at all” – 5 “All the time” | 8 | I worry about being teased. |
| Social Avoidance and Distress New | 1 “Not at all” – 5 “All the time” | 6 | I worry about doing something new in front of other kids .  |
| Social Avoidance and Distress Generalized | 1 “Not at all” – 5 “All the time” | 4 | I am quiet when I’m with a group of kids.  |
| Peer Victimization | 1 “Never” – 3 “A lot” | 5 | Other kids pick on you at school. |
| Peer Delinquency-Child | 1 “Yes”, 2 “No” | 14 | Carried a hidden weapon other than a pocket knife. |
| Peer Delinquency-Peer | 1 “Yes”, 2 “No” | 14 | Carried a hidden weapon other than a pocket knife. |
| Peer Aggression | 1 “Almost always untrue of your child” – 5 Almost always true of your child” | 7 | Doesn’t criticize others. |
| Alcohol Use (L, F, F) | Varies | 6 | Have you EVER used alcohol beverages with your parents' permission (even just a few sips)?  |
| Alcohol Quantity | Open ended | 2 | How many times in the past year have you used alcohol?  |
| Tobacco Use (L, F, F) | Varies | 7 | Have you EVER used cigarettes with your parents permission (even just a few puffs)?  |
| Tobacco Quantity | Open ended | 2 | How many cigarettes have you smoked in your life?  |
| Cannabis Frequency | Open ended | 2 | How many times in the past year have you used marijuana?  |

*Note*. BAS = Behavioral Activation System, FFFS = Flight Fight Freeze System, BIS = Behavioral Inhibition System, -child = child report, -peer = peer report, -parent = parent report, L, F, F = Lifetime, Frequency, Frequency for the three waves (wave 2 and 3 questions asked about the frequency if use and was open ended). Fear of Negative Evaluation, Social Avoidance and Distress (New and Generalized) are the three subcomponents of the social anxiety score in the main analysis.

**Measurement Model**s

In the two factor models, internalizing and externalizing symptoms had large correlations at each wave for child (.75 - .72) and parent report (.63 - .69). Further description of test-retest latent correlations of each model can be found in the supplementary material.

**Additional Measurement Model Details**

**Child-2F.** Internalizing and externalizing symptoms were highly correlated at each wave (*r*w1 = 0.75; *r*w1 = 0.74; *r*w1 = 0.72), but test retest correlations were smaller for internalizing from W1 to W2 but larger from W2 to W3 (*r*w1w2 = 0.71; *r*w2w3 = 0.84). Test-retest correlations for externalizing (*r*w1w2 = 0.80; *r*w2w3 = 0.79) symptoms were consistently larger than cross domain correlations. Each of these patterns suggest basic convergent and divergent validity.

**YSR-BI.** Factors were orthogonal in the bifactor model. Test-retest correlations were large for specific internalizing (*r*w1w2 = 0.79; *r*w2w3 = 0.83), specific externalizing (*r*w1w2 = 0.86; *r*w2w3 = 0.78), and cooccurring (*r*w1w2 = 0.71; *r*w2w3 = 0.80) symptoms across waves.

 **CBCL-2F.** Internalizing and externalizing symptoms were highly correlated at each wave (*r*w1 = 0.63; *r*w2 = 0.63; *r*w3 = 0.69), but test-retest correlations were larger for internalizing (*r*w1w2 = 0.84; *r*w2w3 = 0.80) and externalizing (*r*w1w2 = 0.89; *r*w2w3 = 0.91) symptoms across waves. Each of these patterns suggest basic convergent and divergent validity.

**CBCL-BI.** Factors were orthogonal in the bifactor model. Test-retest correlations were large for specific internalizing (*r*w1w2 = 0.96; *r*w2w3 = 0.94), specific externalizing (*r*w1w2 = 0.91; *r*w2w3 = 0.95), and cooccurring (*r*w1w2 = 0.83; *r*w2w3 = 0.80) internalizing and externalizing symptoms across waves.

**Additional Description of Reliability and Bifactor Psychometrics**

There were clear differences in reliability between the specific factors in the bifactor model and the general factor with the specific factors having higher reliability. In the two-factor model, child report latent factors had similar and lower reliability than the bifactor model. In contrast for parent report, factor $ρ$ varied slightly across the waves but also demonstrated a pattern across waves. The specific internalizing and cooccurring factors had the largest reliabilities, while specific externalizing had lower reliability. Parent report in the two-factor model showed the highest reliability of any factor in any model for externalizing, while internalizing had lower reliability comparable to youth report. Factor score determinacy was above the recommended cutoff in all models for all latent factors with the exception of parent report of specific externalizing at W1 and child report of specific externalizing at W3 and each were close to .90 (.89 and .88, respectively).

H statistics for the bifactor models suggested that the general cooccurring factors and the specific internalizing factors were well defined for child and parent report. The specific externalizing factors were different between child and parent report with child report having low H values (likely due to only having two indicators) and parent report approaching the suggested well-defined cutoff. In the bifactor models, across parent and child report and across time 53% of the common variance was explained by the bifactor. Furthermore, the specific factors were also very similar across reporters with specific externalizing symptoms having values between .51 and .54, while specific internalizing symptoms had values between .42 and .45. The same patterns were observed across $ω$H although $ω$H estimates were larger, and the general factor always explained more variance than the specific factors. Of note, none of the general cooccurring factors had $ω$H statistics above .8 suggesting that the variance in psychopathology is not unidimensional.

**Tables for Broader Convergent and Divergent Validity Analysis**

Tables S2-S5 below contain within wave correlations between each final model (child-2F, child-Bi, parent-2F, parent-BI) and validators at W2 and W3. Tables contain Spearman’s $ρ$ and associated 95% asymmetric confidence limits.

Table S2

*Wave 1 Spearman’s* $ρ$ *and 95% Asymmetric Confidence Intervals for Convergent and Divergent Validity Analysis, Child Report*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | CIN-B | CEX-B | CCO-B | CIN | CEX |
| Age | .00 (-.10, .09) | .01 (-.09, .10) | .04 (-.06, .13) | .05 (-.05, .14) | .03 (-.06, .13) |
| Gender | .03 (-.07, .12) | -.19\* (-.28, -.09) | -.19\* (-.28, -.09) | -.14\* (-.23, -.04) | -.29\* (-.38, -.20) |
| Puberty | .00 (-.09, .10) | .00 (-.09, .10) | .08 (-.02, .17) | .09 (-.01, .18) | .08 (-.01, .18) |
| SES | .04 (-.06, .13) | -.09 (-.18, .01) | -.08 (-.17, .02) | -.05 (-.14, .04) | -.15\* (-.24, -.05) |
| Fear | .11\* (.00, .20) | .03 (-.07, .12) | .04 (-.05, .14) | .09 (-.00, .18) | .04 (-.05, .14) |
| FFFS Fear | .31\* (.22, .40) | .04 (-.05, .14) | -.04 (-.13, .06) |  .08 (-.01, .18) | .00 (-.10, .09) |
| BIS Anxiety | .15\* (.05, .24) | .03 (-.06, .13) | .08 (-.01, .17) | .13\* (.03, .22) | .07 (-.02, .17) |
| Depressed Mood | .24\* (.14, .33) | .02 (-.07, .11) | .15\* (.05, .25) | .21\* (.11, .30) | .13\* (.03, .23) |
| High Intensity Pleasure | -.13\* (-.22, -.02) | .05 (-.04, .15) | .07 (-.03, .16) |  .01 (-.08, .10) | .08 (-.02, .17) |
| Impulsivity/Fun (BAS) | -.04 (-.14, .05) | .25\* (.15, .34) | .27\* (.17, .36) | .20\* (.10, .29) | .37\* (.27, .45) |
| Reward Resp (BAS) | -.11\* (-.21, -.01) | .04 (-.05, .13) | .10\* (.00, .19) | .05 (-.04, .15) | .12\* (.01, .21) |
| Drive (BAS) | -.16\* (-.25, -.06) | .14\* (.03, .23) | .10\* (.00, .20) | .03 (-.07, .12) | .13\* (.02, .22) |
| Low Shyness | -.32\* (-.40, -.22) | .03 (-.06, .13) | .10\* (.00, .20) | -.02 (-.12, .07) | .10\* (.00, .19) |
| Frustration | .05 (-.05, .14) | .15\* (.05, .24) | .13\* (.03, .23) | .12\* (.02, .22) | .18\* (.08, .27) |
| Aggression | .08 (-.02, .17) | .28\* (.18, .37) | .20\* (.10, .29) | .19\* (.09, .28) | .34\* (.24, .42) |
| Lifetime Alcohol Use | .03 (-.06, .12) | .17\* (.07, .26) | .16\* (.05, .25) | .17\* (.07, .26) | .21\* (.11, .30) |
| Lifetime Tobacco Use | .03 (-.07, .12) | .16\* (.06, .25) | .13\* (.03, .22) | .14\* (.03, .23) | .16\* (.06, .25) |
| Perceived Peer Delinq | .05 (-.05, .14) | .18\* (.08, .27) | .36\* (.26, .44) | .35\* (.26, .43) | .43\* (.34, .51) |
| Peer Delinquency-Peer | -.01 (-.11, .09) | .13\* (.02, .22) | .09 (-.01, .19) | .08 (-.02, .17) | .16\* (.05, .25) |
| Peer Aggression-Peer | .00 (-.10, .10) | .02 (-.08, .12) | .15\* (.04, .24) | .13\* (.02, .22) | .15\* (.04, .24) |
| Attentional Control | -.05 (-.14, .05) | -.14\* (-.24, -.04) | -.22\* (-.31, -.12) | -.19\* (-.28, -.09) | -.26\* (-.35, -.16) |
| Inhibitory Control | .04 (-.06, .13) | -.25\* (-.33, -.15) | -.26\* (-.35, -.16) | -.21\* (-.30, -.11) | -.36\* (-.43, -.26) |
| Activational Control | -.02 (-.11, .08) | -.19\* (-.28, -.09) | -.24\* (-.33, -.14) | -.19\* (-.28, -.09) | -.31\* (-.39, -.21) |
| Affiliation | -.05 (-.14, .05) | -.11\* (-.21, -.01) | -.01 (-.10, .09) | -.01 (-.10, .09) | -.10 (-.19, .00) |
| Social Exclusion | .50\* (.42, .57) | .05 (-.05, .14) | .37\* (.27, .44) | .48\* (.39, .55) | .38\* (.29, .46) |
| Peer Victimization | .30\* (.21, .39) | .19\* (.09, .28) | .34\* (.24, .42) | .41\* (.31, .48) | .42\* (.33, .49) |

*Note*. \* = confidence limit does not include 0; C = child; IN = internalizing; EX = externalizing; CO = co-occurring; B = bifactor, BAS/BIS = behavioral activation/inhibition system, FFFS = fight/flight/freeze system, Resp = responsiveness, delinq = delinquency.

Table S3

*Wave 1 Spearman’s* $ρ$ *and 95% Asymmetric Confidence Intervals for Convergent and Divergent Validity Analysis, Parent Report*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | PIN-B | PEX-B | PCO-B | PIN | PEX |
| Age | .04 (-.05, .14) | .01 (-.08, .11) | .03 (-.07, .13) | .04 (-.06, .14) | .05 (-.05, .15) |
| Gender | .20\* (.10, .30) | -.17\* (-.27, -.07) | -.04 (-.14, .06) | .08 (-.02, .18) | -.14\* (-.24, -.04) |
| Puberty | -.02 (-.12, .08) | -.01 (-.11, .09) | -.01 (-.11, .09) | -.02 (-.12, .08) | -.04 (-.14, .06) |
| SES | .06 (-.04, .16) | -.04 (-.14, .06) | -.09 (-.19, .01) | -.04 (-.14, .06) | -.11\* (-.21, -.01) |
| Fear | .25\* (.15, .34) | -.13\* (-.22, -.03) | .33\* (.24, .41) | .40\* (.31, .48) | .18\* (.08, .27) |
| FFFS Fear | .73\* (.68, .77) | -.10 (-.19, .00) | .15\* (.05, .24) | .47\* (.39, .54) | .07 (-.03, .17) |
| BIS Anxiety | .34\* (.25, .43) | -.13\* (-.23, -.03) | .36\* (.27, .44) | .49\* (.41, .56) | .22\* (.12, .31) |
| Depressed Mood | .32\* (.23, .41) | -.06 (-.16, .04) | .55\* (.47, .61) | .66\* (.60, .71) | .44\* (.35, .52) |
| High Intensity Pleasure | -.43\* (-.50, -.34) | .18\* (.08, .27) | -.04 (-.14, .06) | -.25\* (-.34, -.15) | .04 (-.06, .14) |
| Impulsivity/Fun (BAS) | -.08 (-.17, .02) | .38\* (.29, .46) | .44\* (.35, .51) | .36\* (.27, .45) | .64\* (.58, .69) |
| Reward Resp (BAS) | -.08 (-.18, .02) | .18\* (.08, .27) | .24\* (.14, .33) | .14\* (.04, .24) | .25\* (.16, .34) |
| Drive (BAS) | -.30\* (-.39, -.21) | .27\* (.18, .36) | .10\* (.00, .20) | -.08 (-.18, .02) | .22\* (.12, .31) |
| Low Shyness | -.77\* (-.81, -.72) | .11\* (.02, .21) | -.05 (-.15, .05) | -.38\* (-.46, -.29) | .01 (-.09, .11) |
| Frustration | .11\* (.01, .20) | .24\* (.14, .33) | .50\* (.42, .57) | .49\* (.41, .56) | .55\* (.47, .61) |
| Aggression | .04 (-.06, .14) | .43\* (.35, .51) | .51\* (.44, .58) | .47\* (.39, .54) | .71\* (.66, .76) |
| Lifetime Alcohol Use | -.12\* (-.22, -.02) | .15\* (.05, .24) | .11\* (.01, .21) | .05 (-.05, 15) | .15\* (.05, .24) |
| Lifetime Tobacco Use | -.11\* (-.20, -.01) | .13\* (.03, .23) | .06 (-.04, .16) | .01 (-.09, .11) | .11\* (.01, .21) |
| Perceived Peer Delinq | -.11\* (-.21, -.01) | .17\* (.07, .26) | .09 (-.01, .19) | .01 (-.09, .11) | .16\* (.06, .26) |
| Peer Delinquency-Peer | -.05 (-.15, .05) | .10\* (.00, .20) | .13\* (.03, .23) | .06 (-.05, .16) | .16\* (.06, .26) |
| Peer Aggression-Peer | -.04 (-.15, .06) | .03 (-.08, .13) | .20\* (.10, .30) | .14\* (.03, .24) | .17\* (.07, .27) |
| Attentional Control | -.08 (-.18, .02) | -.17\* (-.27, -.07) | -.43\* (-.50, -.34) | -.39\* (-.48, -.31) | -.44\* (-.52, -.35) |
| Inhibitory Control | .11\* (.01, .21) | -.28\* (-.37, -.19) | -.39\* (-.47, -.31) | -.31\* (-.40, -.21) | -.51\* (-.58, -.44) |
| Activational Control |

|  |
| --- |
| .01 (-.09, .11) |

 | -.24\* (-.34, -.15) | -.37\* (-.46, -.28) | -.29\* (-.38, -.20) | -.43\* (-.51, -.35) |
| Affiliation | -.23\* (-.32, -.14) | -.22\* (-.32, -.13) | -.10\* (-.20, -.00) | -.19\* (-.29, -.09) | -.26\* (-.35, -.17) |
| Social Exclusion | .01 (-.09, .11) | .04 (-.06, .14) | .15\* (.05, .24) | .12\* (.02, .21) | .15\* (.05, .25) |
| Peer Victimization | -.05 (-.15, .05) | .13\* (.03, .23) | .15\* (.05, .25) | .11\* (.01, .21) | .18\* (.08, .27) |

*Note*. \* = confidence limit does not include 0; C = child; IN = internalizing; EX = externalizing; CO = co-occurring; B = bifactor, BAS/BIS = behavioral activation/inhibition system, FFFS = fight/flight/freeze system, Resp = responsiveness, delinq = delinquency.

Table S4

*Wave 2 Convergent and Divergent Validity Analysis – Child Report*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | CIN-B | CEX-B | CCO-B | CIN | CEX |
| Age | .09 (-.01, .18) | .01 (-.09, .10) | .03 (-.07, .12) | .08 (-.02, .17) | .05 (-.05, .14) |
| Gender |  .07 (-.03, .16) | -.19\* (-.28, -.09) | -.19\* (-.27, -.08) | -.13\* (-.22, -.02) | -.28\* (-.36, -.18) |
| Puberty | -.02 (-.11, .08) | -.00 (-.10, .10) | -.02 (-.12, .07) | -.02 (-.11, .08) | .01 (-.08, .11) |
| SES | .04 (-.06, .13) | -.13\* (-.22, -.02) | -.17\* (-.26, -.07) | -.13\* (-.23, -.03) | -.23\* (-.32, -.13) |
| Fear | .14\* (.04, .23) | -.06 (-.15, .04) | .01 (-.08, .11) | .06 (-.03, .16) | -.06 (-.16, .03) |
| FFFS Fear | .34\* (.24, .42) | -.04 (-.13, .06) | -.05 (-.14, .05) | .09 (-.01, .18) | -.08 (-.17, .02) |
| BIS Anxiety | .18\* (.07, .27) | -.09 (-.19, .00) | .14\* (.03, .23) | .19\* (.09, .29) | .03 (-.07, .13) |
| Depressed Mood | .21\* (.11, .30) | -.06 (-.16, .03) | .21\* (.11, .30) | .27\* (.16, .35) | .09 (-.00, .19) |
| High Intensity Pleasure | -.23\* (-.32, -.12) | .02 (-.08, .11) | .05 (-.05, .15) | -.04 (-.14, .06) | .06 (-.03, .16) |
| Impulsivity/Fun (BAS) | -.05 (-.14, .05) | .23\* (.12, .32) | .24\* (.14, .33) | .19\* (.08, .28) | .33\* (.23, .41) |
| Reward Resp (BAS) | -.14\* (-.23, -.03) | .02 (-.08, .12) | .09\* (-.00, .19) | .06 (-.04, .15) | .09 (-.01, .18) |
| Drive (BAS) | -.25\* (-.34, .15) | .09 (-.00, .19) | .13\* (.02, .22) | .03 (-.07, .13) | .15\* (.04, .24) |
| Low Shyness | -.34\* (-.42, -.24) | .03 (-.07, .13) | .05 (-.05, .15) | -.06 (-.16, .04) | .06 (-.03, .16) |
| Frustration | .08 (-.02, .17) | .09 (-.00, .19) | .16\* (.06, .26) | .17\* (.06, .26) | .19\* (.08, .28) |
| Aggression | .04 (-.06, .14) | .32\* (.22, .40) | .22\* (.12, .31) | .21\* (.10, .30) | .37\* (.27, .45) |
| Alcohol Quantity | .04 (-.05, .14) | .22\* (.13, .32) | .24\* (.14, .33) | .24\* (.14, .33) | .34\* (.24, .42) |
| Alcohol Frequency | .00 (-.09, .10) | .21\* (.11, .31) | .19\* (.09, .29) | .19\* (.08, .28) | .28\* (.18, .37) |
| Tobacco Quantity | .00 (-.09, .11) | .22\* (.12, .31) | .16\* (.06, .26) | .17\* (.07, .27) | .24\* (.14, .33) |
| Tobacco Frequency | .00 (-.01, .09) | .16\* (.05, .25) | .15\* (.05, .24) | .14\* (.03, .23) | .19\* (.09, .28) |
| Cannabis Frequency | -.06 (-.15, .04) | .12\* (.02, .21) | .05 (-.05, .14) | .03 (-.06, .13) | .13\* (.02, .22) |
| Perceived Peer Delinq | .04 (-.05, .14) | .37\* (.28, .45) | .36\* (.27, .44) | .34\* (.25, .43) | .52\* (.44, .59) |
| Peer Delinquency-Peer | .06 (-.04, .16) | .09 (-.01, .19) | .18\*(.07, .28) | .17\* (.06, .26) | .23\* (.12, .33) |
| Peer Aggression-Peer | .06 (-.04, .16) | .03 (-.07, .14) | .15\* (.04, .25) | .15\* (.03, .24) | .14\* (.03, .24) |
| Attentional Control | -.08 (-.17, .02) | -.20\* (-.29, -.10) | -.23\* (-.32, -.13) | -.23\* (-.32, -.12) | -.30\* (-.39, -.20) |
| Inhibitory Control | -.01 (-.11, .08) | -.13\* (-.23, -.03) | -.25\* (-.34, -.15) | -.21\* (-.30, -.11) | -.31\* (-.39, -.21) |
| Activational Control | -.05 (-.14, .05) | -.25\* (-.33, -.14) | -.21\* (-.30, -.11) | -.19\* (-.28, -.09) | -.32\* (-.40, -.22) |
| Affiliation | -.15\* (-.24, -.04) | -.09 (-.18, .01) | -.05 (-.15, .04) | -.09 (-.18, .01) | -.12\* (-.21, -.01) |
| Social Exclusion | .56\* (.48, .62) | .05 (-.04, .15) | .36\* (.27, .44) | .49\* (.41, .57) | .34\* (.24, .42) |
| Peer Victimization | .29\* (.19, .38) | .22\* (.12, .31) | .39\* (.30, .48) | .45\* (.36, .52) | .46\* (.37, .53) |

*Note*. \* = confidence limit does not include 0; C = child; IN = internalizing; EX = externalizing; CO = co-occurring; B = bifactor, BAS/BIS = behavioral activation/inhibition system, FFFS = fight/flight/freeze system, Resp = responsiveness, delinq = delinquency.

Table S5

*Wave 2 Convergent and Divergent Validity Analysis – Parent Report*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | PIN-B | PEX-B | PCO-B | PIN | PEX |
| Age | .04 (-.06, .14) | .02 (-.08, .12) | .00 (-.10, .10) | .01 (-.09, .11) | .02 (-.08, .12) |
| Gender | .18\* (.08, .27) | -.21\* (-.30, -.11) | -.02 (-.11, .08) | .09 (-.01, .18) | -.16\* (-.26, -.06) |
| Puberty | -.02 (-.12, .08) | -.03 (-.13, .07) | -.03 (-.13, .07) | -.04 (-.14, .07) | -.07 (-.17, .04) |
| SES | .04 (-.06, .14) | -.07 (-.17, .03) | -.08 (-.18, .02) | -.05 (-.15, .05) | -.10\* (-.20, -.00) |
| Fear | .24\* (.14, .33) | -.17\* (-.27, -.07) | .28\* (.18, .37) | .38\* (.29, .46) | .14\* (.04, .24) |
| FFFS Fear | .75\* (.70, .79) | -.07 (-.17, .04) | .16\* (.06, .26) |  .48\* (.39, .55) | .08 (-.02, .18) |
| BIS Anxiety | .33\* (.24, .42) | -.21\* (-.31, -.12) | .43\* (.34, .51) | .55\* (.48, .62) | .22\* (.12, .31) |
| Depressed Mood | .32\* (.22, .40) | -.01 (-.11, .09) | .53\* (.45, .60) | .67\* (.61, .72) | .41\* (.32, .49) |
| High Intensity Pleasure | -.37\* (-.45, -.28) | .10\* (.00, .20) | .03 (-.08, .13) | -.18\* (-.27, -.08) | .07 (-.03, .17) |
| Impulsivity/Fun (BAS) | -.14\* (-.23, -.04) | .33\* (.24, .42) | .41\* (.32, .49) | .34\* (.25, .43) | .60\* (.53, .66) |
| Reward Resp (BAS) | -.19\* (-.28, -.09) | .04 (-.07, .14) | .19\* (.09, .29) | .11\* (.01, .21) | .16\* (.06, .26) |
| Drive (BAS) | -.32\* (-.41, -.23) | .21\* (.12, .31) | .14\* (.03, .23) | -.04 (-.14, .06) | .21\* (.11, .31) |
| Low Shyness | -.69\* (-.74, -.63) | .04 (-.06, .14) | -.05 (-.15, .05) | -.32\* (-.41, -.23) | -.02 (-.12, .09) |
| Frustration | .11\* (.01, .21) | .18\* (.08, .28) | .51\* (.43, .58) | .50\* (.42, .57) | .57\* (.49, .63) |
| Aggression | .03 (-.08, .13) | .45\* (.36, .52) | .46\* (.38, .54) | .41\* (.32, .49) | .68\* (.63, .73) |
| Alcohol Quantity | -.06 (-.16, .04) | .15\* (.05, .25) | .06 (-.04, .16) | .03 (-.08, .13) | .14\* (.04, .23) |
| Alcohol Frequency | -.02 (-.12, .08) | .19\* (.09, .28) | .06 (-.05, .16) | .04 (-.06, .14) | .14\* (.04, .24) |
| Tobacco Quantity | -.12\* (-.22, -.02) | .28\* (.18, .37) | .15\* (.04, .24) | .08 (-.02, .18) | .23\* (.13, .32) |
| Tobacco Frequency | -.04 (-.14, .06) | .21\* (.11, .30) | .10\* (.00, .20) | .06 (-.04, .16) | .17\* (.07, .27) |
| Cannabis Frequency | -.10 (-.20, .00) | .15\* (.05, .24) | .03 (-.07, .13) | -.04 (-.14, .06) | .09 (-.01, .19) |
| Perceived Peer Delinq | -.10\* (-.20, .00) | .27\* (.17, .36) | .09 (-.02, .19) | .01 (-.09, .12) | .24\* (.14, .33) |
| Peer Delinquency-Peer | -.07 (-.17, .04) | .14\* (.04, .25) | .03 (-.07, .14) | -.03 (-.13, .08) | .10\* (.00, .20) |
| Peer Aggression-Peer | -.01 (-.11, .10) | .11\* (.01, .22) | .13\* (.03, .24) | .09 (-.01, .20) | .17\* (.06, .27) |
| Attentional Control | -.08 (-.18, .02) | -.19\* (-.29, -.09) | -.38\* (-.46, -.29) | -.35\* (-.44, -.26) | -.45\* (-.53, -.37) |
| Inhibitory Control | .08 (-.02, .18) | -.23\* (-.33, -.13) | -.39\* (-.47, -.30) | -.30\*(-.39, -.21) | -.48\* (-.55, -.40) |
| Activational Control | .02 (-.08, .12) | -.30\* (-.39, -.21) | -.32\* (-.41, -.22) | -.26\* (-.35, -.16) | -.46\* (-.54, -.38) |
| Affiliation | -.31\* (-.40, -.22) | -.23\* (-.32, -.13) | -.06 (-.16, .04) | -.17\* (-.27, -.07) | -.17\* (-.27, -.07) |
| Social Exclusion | .16\* (.06, .26) | .00 (-.10, .10) | .07 (-.03, .17) | .14\* (.04, .24) | .06 (-.04, .16) |
| Peer Victimization |  -.03 (-.13, .07) | .14\* (.03, .23) | .17\* (.07, .27) | .17\* (.07, .27) | .21\* (.12, .31) |

*Note*. \* = confidence limit does not include 0; C = child; IN = internalizing; EX = externalizing; CO = co-occurring; B = bifactor, BAS/BIS = behavioral activation/inhibition system, FFFS = fight/flight/freeze system, Resp = responsiveness, delinq = delinquency.

Table S6

*Wave 3 Convergent and Divergent Validity Analysis – Child Report*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | CIN-B | CEX-B | CCO-B | CIN | CEX |
| Age | .09 (-.01, .18) | .03 (-.07, .12) | .08 (-.01, .17) | .10\* (.00, .19) | .08 (-.01, .18) |
| Gender  | .06 (-.04, .15) | -.12\* (-.21, -.02) | -.08 (-.18, .01) | -.03 (-.13, .06) | -.15\* (-.24, -.04) |
| Puberty | -.03 (-.13, .07) | .07 (-.03, .17) | .02 (-.08, .12) | .01 (-.09, .11) | .06 (-.04, .16) |
| SES | .07 (-.02, .16) | -.14\* (-.23, -.04) |  -.23\* (-.32, -.13) | -.16\* (-.25, -.06) | -.26\* (-.35, -.16) |
| Fear | .13\* (.02, .22) | -.04 (-.14, .05) | .12\* (.01, .22) | .17\* (.06, .26) | .07 (-.02, .17) |
| FFFS Fear | .34\* (.24, .42) | .00 (-.10, .10) | -.01 (-.11, .09) | .11\* (.00, .21) | .00 (-.10, .10) |
| BIS Anxiety | .14\* (.03, .23) | -.09 (-.19, .00) | .14\* (.04, .24) | .18\* (.07, .27) | .07 (-.02, .17) |
| Depressed Mood | .24\* (.14, .33) | .01 (-.08, .11) | .26\* (.16, .35) | .31\* (.21, .39) | .22\* (.12, .31) |
| High Intensity Pleasure | -.16\* (-.25, -.05) | .06 (-.04, .16) | .04 (-.06, .14) | -.04 (-.14, .06) | .08 (-.02, .17) |
| Impulsivity/Fun (BAS) | -.06 (-.16, .04) | .23\* (.13, .32) | .25\* (.14, .34) | .19\* (.08, .28) | .34\* (.24, .42) |
| Reward Resp (BAS) | -.13\* (-.22, -.02) | .09 (-.00, .19) | .15\* (.04, .24) | .08 (-.02, .18) | .19\* (.08, .28) |
| Drive (BAS) | -.18\* (-.28, -.08) | .14\* (.03, .23) | 04 (-.06, .14) | -.02 (-.12, .07) | .10\* (-.00, .20) |
| Low Shyness | -.33\* (-.41, -.23) | .03 (-.07, .13) | .12\* (.02, .22) | -.01 (-.10, .09) | .11\* (.01, .21) |
| Frustration | .09 (-.00, .20) | .15\* (.04, .24) | .23\* (.13, .32) | .24\* (.14, .33) | .28\* (.17, .36) |
| Aggression | .06 (-.03, .16) | .32\* (.22, .40) | .26\* (.16, .35) | .25\* (.14, .33) | .39\* (.30, .47) |
| Alcohol Quantity | .02 (-.08, .12) | .23\* (.13, .32) | .32\* (.22, .40) | .29\* (.19, .38) | .38\* (.28, .46) |
| Alcohol Frequency | .01 (-.09, .11) | .25\* (.14, .34) | .31\* (.21, .40) | .29\* (.19, .38) | .39\* (.29, .47) |
| Tobacco Quantity | -.06 (-.16, .04) | .30\* (.20, .39) | .21\* (.11, .30) | .18\* (.07, .27) | .33\* (.23, .41) |
| Tobacco Frequency | -.03 (-.13, .07) | .31\* (.21, .40) | .18\* (.07, .27) | .15\* (.05, .25) | .30\* (.20, .39) |
| Cannabis Frequency | .00 (-.10, .10) | .16\* (.05, .25) | .18\* (.08, .27) | .15\* (.05, .25) | .24\* (.14, .33) |
| Perceived Peer Delinq | .02 (-.08, .12) | .36\* (.26, .44) | .39\* (.30, .48) | .35\* (.25, .44) | .54\* (.46, .61) |
| Peer Delinquency-Peer | -.02 (-.13, .09) | .18\* (.06, .28) | .18\* (.07, .28) | .14\* (.03, .24) | .26\* (.15, .36) |
| Peer Aggression-Peer | .01 (-.09, .12) | .17\* (.05, .27) | .13\* (.01, .23) | .10 (-.01, .20) | .22\*(.11, .32) |
| Attentional Control | -.05 (-.15, .05) | -.18\* (-.27, -.08) | -.26\* (-.35, -.16) | -.24\* (-.33, -.14) | -.31\* (-.40, -.21) |
| Inhibitory Control | .08 (-.02, .17) | -.25\* (-.34, -.15) | -.26\* (-.35, -.16) | -.19\* (-.29, -.09) | -.35\* (-.43, -.25) |
| Activational Control | .01 (-.09, .11) | -.26\* (-.35, -.16) | -.21\* (-.30, -.11) | -.17\* (-.26, -.06) | -.33\* (-.41, -.23) |
| Affiliation | -.15\* (-.24, -.04) | -.10\* (-.20, -.00) | -.04 (-.14, .05) | -.09 (-.18, .01) | -.07 (-.17, .02) |
| Social Exclusion | .52\* (.44, .59) | -.02 (-.12, .08) | .38\* (.29, .46) | .49\* (.41, .57) | .35\* (.25, .43) |
| Peer Victimization | .29\* (.19, .38) | .12\* (.02, .22) | .36\* (.26, .44) | .42\* (.32, .49) | .39\* (.30, .47) |

*Note*. \* = confidence limit does not include 0; C = child; IN = internalizing; EX = externalizing; CO = co-occurring; B = bifactor, BAS/BIS = behavioral activation/inhibition system, FFFS = fight/flight/freeze system, Resp = responsiveness, delinq = delinquency.

Table S7

*Wave 3 Convergent and Divergent Validity Analysis - Parent*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | PIN-B | PEX-B | PCO-B | PIN | PEX |
| Age | .02 (-.08, .12) | .01 (-.09, .11) | .01 (-.09, .11) | .00 (-.10, .10) | .02 (-.08, .12) |
| Gender | .21\* (.11, .30) | -.21\* (-.30, -.11) | .01 (-.09, .11) | .12\* (.02, .22) | -.11\* (-.21, -.01) |
| Puberty | .01 (-.09, .12) | -.07 (-.17, .04) | -.02 (-.12, .08) | -.04 (-.14, .07) | -.07 (-.17, .03) |
| SES | .10\* (.00, .20) | -.08 (-.18, .20) | -.11\* (-.21, -.01) | -.05 (-.15, .05) | -.11\* (-.21, -.01) |
| Fear | .21\* (.11, .30) | -.13\* (-.23, -.03) | .33\* (.24, .42) | .38\* (.29, .47) | .17\* (.07, .27) |
| FFFS Fear | .71\* (.66, .76) | -.03 (-.13, .07) | .18\* (.08, .28) | .48\* (.40, .55) | .13\* (.03, .23) |
| BIS Anxiety | .29\* (.19, .38) | -.16\* (-.26, -.05) | .45\* (.37, .53) | .53\* (.45, .60) | .26\* (.16, .35) |
| Depressed Mood | .26\* (.16, .36) | .00 (-.11, .10) | .59\* (.52, .66) | .69\* (.63, .74) | .51\* (.43, .58) |
| High Intensity Pleasure | -.33\*(-.42, -.24) | .14\* (.04, .24) | .04 (-.06, .14) | -.12\* (-.22, -.02) | .10\* (.00, .20) |
| Impulsivity/Fun (BAS) | -.08 (-.18, .02) | .39\* (.03, .48) | .44\* (.35, .52) | .37\* (.28, .46) | .64\* (.57, .69) |
| Reward Resp (BAS) | -.14\* (-.24, -.04) | .17\* (.07, .27) | .25\* (.16, .35) | .17\* (.07, .27) | .29\* (.19, .38) |
| Drive (BAS) | -.22\* (-.32, -.12) | .24\* (.14, .34) | .13\* (.03, .23) | .01 (-.10, .11) | .25\* (.15, .34) |
| Low Shyness | -.69\* (-.74, -.64) | .07 (-.04, .17) | -.05 (.48, .05) | -.36\* (-.45, -.27) | -.04 (-14, .06) |
| Frustration | .15\* (.04, .24) | .17\* (.07, .27) | .55\* (.47, .61) | .54\* (.46, .61) | .57\* (.50, .64) |
| Aggression | .04 (-.06, .14) | .40\* (.31, .48) | 55\* (.48, .62) | .49\* (.41, .57) | .71\* (.65, .76) |
| Alcohol Quantity | -.08 (-.18, .02) | .13\* (.03, .23) | .08 (-.02, .19) |  .00 (-.10, .11) | .15\* (.05, .25) |
| Alcohol Frequency | -.07 (-.18, .04) | .18\* (.07, .29) | .08 (-.03, .19) | .20\* (-.09, .13) | .16\* (.05, .26) |
| Tobacco Quantity | -.15\* (-.25, -.05) | .22\* (.12, .32) | .10\* (.00, .20) | -.01 (-.12, .09) | .19\* (.09, .28) |
| Tobacco Frequency | -.12\* (-.22, .02) | .20\* (.10, .29) | .09 (-.02, .19) | .00 (-.11, .10) | .17\* (.07, .27) |
| Cannabis Frequency | -.11\* (-.21, -.01) | .12\* (.02, .22) | .06 ( -.04, .16) | -.03 (-.13, .07) | .11\* (.01, .22) |
| Perceived Peer Delinq | -.16\* (-.25, -.05) | .19\* (.09, .29) | .11\* (.01, .21) | -.02 (-.13, .08) | .20\* (.10, .29) |
| Peer Delinquency-Peer | -.07 (-.18, 0.04) | .18\* (.07, .29) | .08 (-.03, .19) | .22\* (-.09, .23) | .16\* (.05, .26) |
| Peer Aggression-Peer | .00 (-.11, .11) | .17\* (.06, .27) | .06 (-.05, .17) | .04 (-.08, .15) | .13\* (.02, .24) |
| Attentional Control | -.09 (-.19, .01) | -.19\* (-.29, -.09) | -.39\* (-.47, -.30) | -.38\* (-.47, -.29) | -.47\* (-.54, -.38) |
| Inhibitory Control | .11\* (.01, .21) | -.25\* (-.35, -.15) | -.41\* (-.49-.32) | -.36\* (-.44, -.26) | -.55\* (-.62, -.47) |
| Activational Control | .04 (-.06, .15) | -.28\* (-.37, -.18) | -.29\* (-.38, -.20) | -.23\* (-.33, -.13) | -.41\* (-.50, -.33) |
| Affiliation | -.26\* (-.35, -.16) | -.18\* (-.28, -.08) | -.13\* (-.13, .07) | -.14\* (-.24, -.04) | -.14\* (-.24, -.03) |
| Social Exclusion | .05 (-.06, .15) | .02 (-.09, .12) | .20\* (.10, .29) | .22\* (.12, .31) | .17\* (.07, .27) |
| Peer Victimization | -.02 (-.12, .08) | .07 (-.03, .17) | .21\* (.11, .31) | .17\* (.07, .27) | .21\* (.11, .31) |
|  |  |  |  |  |  |

*Note*. \* = confidence limit does not include 0, C = child; IN = internalizing; EX = externalizing; CO = co-occurring; B = bifactor, BAS/BIS = behavioral activation/inhibition system, FFFS = fight/flight/freeze system, Resp = responsiveness, delinq = delinquency.

**Further Details on Replication across Waves for the bivariate associations in Figure 2**

Many of the effects that did not replicate either (1) added to validity over time, (2) barely missed replication (less than .02 difference in correlation) and decreased validity, (3) were consistent with expected developmental changes, or (4) involved variables with lower reliabilities than other constructs in the study. Given the large number of variables involved, we picked one example of each pattern to describe here. Regarding (1), SES correlated negatively while behavioral inhibition anxiety and peer report of peer delinquency correlated positively with child cooccurring symptoms at W2 but not at W1. Each of these patterns suggest an increase in convergent or divergent validity over time. Regarding (2), alcohol use, peer report of peer delinquency, affiliation and social exclusion were not related to W2 parent cooccurring symptoms but were related to W1 parent cooccurring symptoms. Each of these patterns suggest a slight decrease in divergent validity. Regarding (3), later in adolescence high intensity pleasure correlates positively with parent report of externalizing symptoms (W3), while cannabis frequency became significantly positively associated with child cooccurring symptoms, child internalizing symptoms, parent report of specific externalizing symptoms, and parent report of externalizing symptoms at W3, while cannabis frequency correlated negatively with parent specific internalizing symptoms at W3. W3 represents an age in which cannabis initiation is more frequent. Regarding (4), reward responsiveness, inhibitory control, affiliation, and the fear scale from the EATQ had poorer reliability than other constructs in the study and were associated with some changes in correlations across the waves for both reporters.

**Tables for Differences in Spearman’s** $ρ$ **at Wave 2 and Wave 3 for Child and Parent Report**

Tables S8 and S9 below contain differences in Spearman’s $ρ$ across models and associated 95% asymmetric confidence limits.

Table S8

*Wave 2 Differences in Spearman’s* $ρ$ *and Associated 95% asymmetric confidence interval for Child and Parent Report*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| W2 Child | CINB\_CIN | CEXB\_CEX | CCOB\_CIN | CCOB\_CEX |
| age | 0.01 (-0.1, 0.12) | -0.04 (-0.13, 0.06) | -0.05 (-0.09, -0.01) | -0.02 (-0.09, 0.05) |
| gender | 0.19 (0.09, 0.3) | 0.08 (-0.01, 0.17) | -0.06 (-0.1, -0.02) | 0.09 (0.02, 0.16) |
| puberty | 0 (-0.11, 0.1) | -0.01 (-0.12, 0.08) | -0.01 (-0.05, 0.03) | -0.04 (-0.1, 0.04) |
| SES | 0.17 (0.06, 0.27) | 0.1 (0.01, 0.19) | -0.04 (-0.07, 0) | 0.06 (-0.01, 0.13) |
| Fear | 0.08 (-0.03, 0.17) | 0.01 (-0.09, 0.1) | -0.05 (-0.09, -0.01) | 0.08 (0.01, 0.15) |
| FFS\_Fear | 0.25 (0.14, 0.36) | 0.04 (-0.06, 0.13) | -0.13 (-0.18, -0.09) | 0.03 (-0.04, 0.1) |
| Anxiety | -0.02 (-0.13, 0.08) | -0.13 (-0.22, -0.03) | -0.06 (-0.1, -0.03) | 0.1 (0.04, 0.17) |
| depmood | -0.05 (-0.15, 0.05) | -0.16 (-0.24, -0.06) | -0.05 (-0.09, -0.01) | 0.12 (0.05, 0.18) |
| surge | -0.19 (-0.3, -0.09) | -0.04 (-0.14, 0.05) | 0.09 (0.05, 0.13) | -0.01 (-0.08, 0.06) |
| impfun | -0.23 (-0.33, -0.13) | -0.1 (-0.18, -0.02) | 0.06 (0.02, 0.1) | -0.08 (-0.15, -0.02) |
| rewres | -0.19 (-0.29, -0.09) | -0.06 (-0.16, 0.03) | 0.04 (0, 0.08) | 0.01 (-0.06, 0.08) |
| drive | -0.28 (-0.39, -0.18) | -0.05 (-0.15, 0.05) | 0.1 (0.06, 0.13) | -0.02 (-0.09, 0.05) |
| low\_shy | -0.28 (-0.39, -0.17) | -0.04 (-0.14, 0.06) | 0.11 (0.08, 0.15) | -0.02 (-0.09, 0.05) |
| frust | -0.09 (-0.19, 0.02) | -0.09 (-0.17, 0) | 0 (-0.05, 0.04) | -0.02 (-0.09, 0.05) |
| aggres | -0.17 (-0.27, -0.08) | -0.05 (-0.14, 0.03) | 0.01 (-0.02, 0.05) | -0.15 (-0.22, -0.07) |
| alcohol\_quan | -0.2 (-0.31, -0.09) | -0.11 (-0.19, -0.02) | 0 (-0.04, 0.04) | -0.09 (-0.17, -0.03) |
| alcohol\_freq | -0.19 (-0.3, -0.08) | -0.06 (-0.15, 0.01) | 0.01 (-0.04, 0.05) | -0.09 (-0.16, -0.01) |
| tobacco\_quan | -0.16 (-0.28, -0.03) | -0.02 (-0.05, 0.02) | -0.01 (-0.05, 0.04) | -0.07 (-0.13, -0.02) |
| tobacco\_freq | -0.14 (-0.25, -0.03) | -0.03 (-0.1, 0.02) | 0.01 (-0.03, 0.05) | -0.04 (-0.11, 0.03) |
| marijuana\_freq | -0.09 (-0.23, 0.06) | -0.01 (-0.06, 0.04) | 0.01 (-0.04, 0.06) | -0.08 (-0.15, 0) |
| ppd | -0.3 (-0.41, -0.19) | -0.15 (-0.23, -0.06) | 0.02 (-0.02, 0.06) | -0.16 (-0.23, -0.09) |
| peer\_rule | -0.1 (-0.22, 0.01) | -0.14 (-0.24, -0.03) | 0.01 (-0.02, 0.05) | -0.05 (-0.13, 0.02) |
| peer\_aggr | -0.08 (-0.19, 0.03) | -0.11 (-0.21, 0) | 0 (-0.03, 0.05) | 0.01 (-0.06, 0.08) |
| atten | 0.15 (0.05, 0.25) | 0.1 (0.01, 0.2) | -0.01 (-0.05, 0.03) | 0.07 (0, 0.14) |
| inhib | 0.19 (0.08, 0.3) | 0.18 (0.08, 0.27) | -0.04 (-0.08, 0) | 0.06 (-0.01, 0.13) |
| actct | 0.15 (0.04, 0.27) | 0.07 (-0.02, 0.16) | -0.02 (-0.06, 0.02) | 0.1 (0.04, 0.18) |
| affil | -0.06 (-0.17, 0.04) | 0.03 (-0.06, 0.13) | 0.04 (0, 0.08) | 0.07 (0, 0.14) |
| social\_excl | 0.06 (-0.04, 0.16) | -0.29 (-0.39, -0.19) | -0.13 (-0.17, -0.1) | 0.02 (-0.05, 0.09) |
| peer\_victim | -0.16 (-0.27, -0.06) | -0.24 (-0.34, -0.15) | -0.05 (-0.09, -0.02) | -0.06 (-0.13, 0) |
| W2 Parent | PINB\_PIN | PEXB\_PEX | PCOB\_PIN | PCOB\_PEX |
| age | 0.03 (-0.08, 0.14) | 0 (-0.1, 0.1) | -0.01 (-0.05, 0.05) | -0.02 (-0.08, 0.05) |
| gender | 0.09 (-0.01, 0.2) | -0.05 (-0.15, 0.06) | -0.1 (-0.15, -0.05) | 0.14 (0.08, 0.21) |
| puberty | 0.02 (-0.09, 0.13) | 0.04 (-0.07, 0.14) | 0.01 (-0.04, 0.06) | 0.04 (-0.03, 0.1) |
| SES | 0.09 (-0.02, 0.21) | 0.03 (-0.08, 0.13) | -0.04 (-0.09, 0.01) | 0.02 (-0.05, 0.09) |
| Fear | -0.12 (-0.22, -0.02) | -0.32 (-0.44, -0.21) | -0.07 (-0.13, -0.03) | 0.13 (0.08, 0.19) |
| FFS\_Fear | 0.29 (0.2, 0.37) | -0.2 (-0.32, -0.09) | -0.3 (-0.35, -0.25) | 0.03 (-0.04, 0.09) |
| Anxiety | -0.21 (-0.3, -0.12) | -0.47 (-0.57, -0.36) | -0.11 (-0.16, -0.07) | 0.18 (0.11, 0.24) |
| depmood | -0.31 (-0.4, -0.23) | -0.44 (-0.53, -0.33) | -0.1 (-0.14, -0.06) | 0.1 (0.03, 0.17) |
| surge | -0.23 (-0.33, -0.13) | 0.05 (-0.06, 0.14) | 0.17 (0.12, 0.22) | -0.03 (-0.09, 0.04) |
| impfun | -0.44 (-0.53, -0.32) | -0.22 (-0.33, -0.12) | 0.11 (0.06, 0.16) | -0.15 (-0.2, -0.09) |
| rewres | -0.28 (-0.39, -0.18) | -0.14 (-0.24, -0.04) | 0.09 (0.04, 0.15) | 0.02 (-0.06, 0.08) |
| drive | -0.3 (-0.39, -0.19) | 0 (-0.11, 0.11) | 0.16 (0.1, 0.21) | -0.08 (-0.14, -0.02) |
| low\_shy | -0.36 (-0.46, -0.28) | 0.09 (-0.02, 0.2) | 0.27 (0.22, 0.33) | 0 (-0.06, 0.06) |
| frust | -0.37 (-0.47, -0.27) | -0.38 (-0.48, -0.29) | 0.02 (-0.03, 0.07) | -0.05 (-0.11, 0) |
| aggres | -0.38 (-0.49, -0.28) | -0.23 (-0.32, -0.13) | 0.05 (0.01, 0.1) | -0.21 (-0.26, -0.16) |
| alcohol\_quan | -0.09 (-0.2, 0.02) | 0.01 (-0.09, 0.11) | 0.03 (-0.02, 0.09) | -0.07 (-0.14, -0.01) |
| alcohol\_freq | -0.06 (-0.17, 0.04) | 0.05 (-0.04, 0.14) | 0.01 (-0.04, 0.06) | -0.08 (-0.15, -0.02) |
| tobacco\_quan | -0.2 (-0.33, -0.07) | 0.05 (0, 0.11) | 0.06 (0.02, 0.11) | -0.08 (-0.13, -0.04) |
| tobacco\_freq | -0.1 (-0.23, 0.01) | 0.04 (-0.06, 0.11) | 0.04 (0, 0.09) | -0.07 (-0.12, -0.02) |
| marijuana\_freq | -0.06 (-0.15, 0.05) | 0.05 (0, 0.12) | 0.07 (0, 0.14) | -0.06 (-0.09, -0.03) |
| ppd | -0.12 (-0.24, -0.01) | 0.03 (-0.07, 0.13) | 0.08 (0.03, 0.13) | -0.15 (-0.21, -0.08) |
| peer\_rule | -0.04 (-0.17, 0.08) | 0.05 (-0.07, 0.16) | 0.06 (0, 0.12) | -0.06 (-0.13, 0) |
| peer\_aggr | -0.1 (-0.23, 0.02) | -0.05 (-0.17, 0.06) | 0.04 (-0.01, 0.1) | -0.03 (-0.09, 0.02) |
| atten | 0.28 (0.17, 0.39) | 0.28 (0.17, 0.39) | -0.02 (-0.07, 0.03) | 0.09 (0.03, 0.15) |
| inhib | 0.39 (0.28, 0.5) | 0.25 (0.14, 0.36) | -0.08 (-0.13, -0.03) | 0.09 (0.03, 0.16) |
| actct | 0.27 (0.16, 0.38) | 0.16 (0.05, 0.26) | -0.07 (-0.13, -0.02) | 0.14 (0.08, 0.2) |
| affil | -0.14 (-0.25, -0.04) | -0.03 (-0.14, 0.06) | 0.11 (0.06, 0.16) | 0.13 (0.07, 0.2) |
| social\_excl | 0.02 (-0.09, 0.13) | -0.06 (-0.17, 0.05) | -0.07 (-0.12, -0.02) | 0.01 (-0.05, 0.08) |
| peer\_victim | -0.2 (-0.32, -0.09) | -0.08 (-0.2, 0.02) | 0 (-0.05, 0.06) | -0.04 (-0.1, 0.02) |

Note. C = child; P = parent; IN = internalizing; EX = externalizing; CO = co-occurring; B = bifactor; FFS = fight/flight/freeze; depmood = depressed mood; surge = surgency or high intensity pleasure; rewres = reward responsiveness; frust = frustration; aggres = aggression; ppd = perceived peer delinquency; rule = rule breaking; aggr = aggression; atten = attention; inhib = inhibitory control; actct = activational control; excl = exclusion; victim = victimization.

Table S9

*Wave 3 Differences in Spearman’s* $ρ$ *and Associated 95% asymmetric confidence interval for Child and Parent Report*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| W3 Child | CINB\_CIN | CEXB\_CEX | CCOB\_CIN | CCOB\_CEX |
| age | -0.01 (-0.12, 0.1) | -0.06 (-0.16, 0.04) | -0.02 (-0.06, 0.02) | -0.01 (-0.07, 0.05) |
| gender | 0.09 (-0.01, 0.19) | 0.02 (-0.07, 0.12) | -0.05 (-0.09, -0.01) | 0.06 (0, 0.13) |
| puberty | -0.04 (-0.14, 0.08) | 0.01 (-0.1, 0.12) | 0.01 (-0.02, 0.05) | -0.04 (-0.1, 0.03) |
| SES | 0.23 (0.12, 0.33) | 0.12 (0.03, 0.21) | -0.07 (-0.11, -0.03) | 0.03 (-0.03, 0.09) |
| Fear | -0.04 (-0.14, 0.06) | -0.12 (-0.22, -0.02) | -0.05 (-0.08, -0.01) | 0.05 (-0.01, 0.11) |
| FFS\_Fear | 0.23 (0.12, 0.32) | 0 (-0.1, 0.1) | -0.12 (-0.16, -0.08) | -0.01 (-0.08, 0.06) |
| Anxiety | -0.04 (-0.15, 0.06) | -0.17 (-0.26, -0.07) | -0.03 (-0.07, 0) | 0.07 (0.01, 0.14) |
| depmood | -0.07 (-0.17, 0.03) | -0.21 (-0.31, -0.11) | -0.05 (-0.08, -0.01) | 0.04 (-0.02, 0.1) |
| surge | -0.12 (-0.23, -0.01) | -0.01 (-0.12, 0.09) | 0.08 (0.04, 0.12) | -0.04 (-0.1, 0.03) |
| impfun | -0.25 (-0.35, -0.14) | -0.11 (-0.21, 0) | 0.06 (0.02, 0.1) | -0.09 (-0.15, -0.03) |
| rewres | -0.21 (-0.31, -0.1) | -0.09 (-0.19, 0.01) | 0.06 (0.02, 0.1) | -0.04 (-0.11, 0.03) |
| drive | -0.16 (-0.27, -0.05) | 0.04 (-0.07, 0.14) | 0.07 (0.02, 0.11) | -0.06 (-0.12, 0) |
| low\_shy | -0.32 (-0.43, -0.21) | -0.09 (-0.19, 0.02) | 0.13 (0.09, 0.17) | 0.01 (-0.06, 0.07) |
| frust | -0.14 (-0.25, -0.03) | -0.13 (-0.22, -0.03) | -0.01 (-0.04, 0.03) | -0.04 (-0.11, 0.02) |
| aggres | -0.18 (-0.29, -0.07) | -0.08 (-0.18, 0.02) | 0.02 (-0.02, 0.05) | -0.13 (-0.19, -0.07) |
| alcohol\_quan | -0.27 (-0.37, -0.16) | -0.14 (-0.23, -0.05) | 0.03 (-0.01, 0.06) | -0.06 (-0.12, 0) |
| alcohol\_freq | -0.28 (-0.4, -0.17) | -0.14 (-0.24, -0.05) | 0.02 (-0.02, 0.06) | -0.08 (-0.13, -0.01) |
| tobacco\_quan | -0.24 (-0.35, -0.12) | -0.03 (-0.1, 0.04) | 0.03 (0, 0.07) | -0.12 (-0.17, -0.06) |
| tobacco\_freq | -0.19 (-0.29, -0.07) | 0.01 (-0.06, 0.07) | 0.02 (-0.01, 0.06) | -0.12 (-0.18, -0.07) |
| marijuana\_freq | -0.15 (-0.26, -0.04) | -0.08 (-0.19, 0.01) | 0.03 (0, 0.06) | -0.06 (-0.11, -0.01) |
| ppd | -0.34 (-0.45, -0.22) | -0.19 (-0.28, -0.09) | 0.05 (0.01, 0.08) | -0.15 (-0.21, -0.08) |
| peer\_rule | -0.16 (-0.28, -0.05) | -0.09 (-0.19, 0.02) | 0.04 (0, 0.08) | -0.08 (-0.15, -0.02) |
| peer\_aggr | -0.09 (-0.2, 0.03) | -0.05 (-0.14, 0.04) | 0.02 (-0.02, 0.07) | -0.09 (-0.16, -0.03) |
| atten | 0.19 (0.08, 0.3) | 0.13 (0.04, 0.23) | -0.02 (-0.06, 0.02) | 0.05 (-0.01, 0.11) |
| inhib | 0.27 (0.17, 0.37) | 0.1 (0, 0.2) | W1/W2 | 0.09 (0.03, 0.15) |
| actct | 0.18 (0.09, 0.28) | 0.06 (-0.02, 0.16) | -0.04 (-0.08, 0) | 0.12 (0.05, 0.18) |
| affil | -0.06 (-0.18, 0.04) | -0.03 (-0.14, 0.08) | 0.04 (0, 0.09) | 0.03 (-0.04, 0.1) |
| social\_excl | 0.02 (-0.07, 0.12) | -0.37 (-0.47, -0.26) | -0.11 (-0.15, -0.08) | 0.04 (-0.02, 0.1) |
| peer\_victim | -0.13 (-0.23, -0.02) | -0.27 (-0.38, -0.17) | -0.06 (-0.1, -0.02) | -0.04 (-0.09, 0.02) |
| W3 Parent | PINB\_PIN | PEXB\_PEX | PCOB\_PIN | PCOB\_PEX |
| age | 0.02 (-0.09, 0.12) | -0.01 (-0.11, 0.09) | 0 (-0.05, 0.06) | -0.01 (-0.07, 0.05) |
| gender | 0.09 (-0.02, 0.19) | -0.09 (-0.19, 0.01) | -0.11 (-0.16, -0.06) | 0.13 (0.07, 0.18) |
| puberty | 0.05 (-0.05, 0.15) | 0.01 (-0.1, 0.12) | 0.01 (-0.04, 0.06) | 0.05 (-0.01, 0.11) |
| SES | 0.15 (0.04, 0.25) | 0.03 (-0.08, 0.14) | -0.06 (-0.12, -0.01) | 0 (-0.06, 0.06) |
| Fear | -0.18 (-0.28, -0.09) | -0.35 (-0.46, -0.24) | -0.06 (-0.11, -0.01) | 0.12 (0.06, 0.17) |
| FFS\_Fear | 0.25 (0.17, 0.34) | -0.18 (-0.29, -0.07) | -0.28 (-0.33, -0.22) | 0.03 (-0.03, 0.1) |
| Anxiety | -0.24 (-0.33, -0.15) | -0.46 (-0.56, -0.36) | -0.08 (-0.12, -0.04) | 0.15 (0.1, 0.21) |
| depmood | -0.38 (-0.48, -0.28) | -0.47 (-0.58, -0.37) | -0.05 (-0.1, -0.01) | 0.13 (0.07, 0.18) |
| surge | -0.21 (-0.32, -0.11) | 0.05 (-0.06, 0.16) | 0.17 (0.11, 0.22) | -0.05 (-0.11, 0) |
| impfun | -0.41 (-0.51, -0.31) | -0.18 (-0.29, -0.09) | 0.1 (0.05, 0.15) | -0.14 (-0.2, -0.09) |
| rewres | -0.3 (-0.4, -0.21) | -0.12 (-0.22, -0.03) | 0.1 (0.05, 0.15) | -0.04 (-0.1, 0.02) |
| drive | -0.25 (-0.34, -0.15) | 0.02 (-0.08, 0.12) | 0.11 (0.05, 0.17) | -0.09 (-0.15, -0.03) |
| low\_shy | -0.36 (-0.45, -0.28) | 0.1 (-0.01, 0.21) | 0.28 (0.23, 0.33) | -0.02 (-0.08, 0.04) |
| frust | -0.37 (-0.47, -0.27) | -0.39 (-0.49, -0.29) | 0.03 (-0.02, 0.07) | -0.01 (-0.06, 0.04) |
| aggres | -0.42 (-0.53, -0.32) | -0.3 (-0.39, -0.22) | 0.09 (0.04, 0.13) | -0.15 (-0.19, -0.1) |
| alcohol\_quan | -0.09 (-0.19, 0.03) | -0.02 (-0.12, 0.09) | 0.08 (0.02, 0.14) | -0.06 (-0.13, 0) |
| alcohol\_freq | -0.11 (-0.23, -0.01) | -0.01 (-0.12, 0.09) | 0.08 (0.03, 0.14) | -0.06 (-0.12, 0) |
| tobacco\_quan | -0.14 (-0.25, -0.02) | 0.04 (-0.05, 0.13) | 0.11 (0.05, 0.17) | -0.09 (-0.15, -0.03) |
| tobacco\_freq | -0.12 (-0.23, -0.01) | 0.03 (-0.07, 0.12) | 0.09 (0.04, 0.14) | -0.08 (-0.14, -0.02) |
| marijuana\_freq | -0.08 (-0.17, 0) | 0 (-0.09, 0.09) | 0.09 (0.04, 0.15) | -0.05 (-0.12, 0.02) |
| ppd | -0.13 (-0.24, -0.02) | -0.01 (-0.11, 0.09) | 0.13 (0.08, 0.19) | -0.09 (-0.15, -0.03) |
| peer\_rule | -0.09 (-0.2, 0.02) | 0.02 (-0.1, 0.15) | 0.06 (0, 0.12) | -0.07 (-0.14, 0) |
| peer\_aggr | -0.04 (-0.15, 0.09) | 0.03 (-0.08, 0.16) | 0.03 (-0.03, 0.09) | -0.07 (-0.14, 0) |
| atten | 0.26 (0.16, 0.37) | 0.26 (0.16, 0.38) | -0.03 (-0.08, 0.02) | 0.06 (0, 0.12) |
| inhib | 0.4 (0.3, 0.51) | 0.24 (0.13, 0.34) | -0.12 (-0.17, -0.07) | 0.08 (0.02, 0.14) |
| actct | 0.24 (0.14, 0.35) | 0.12 (0.01, 0.22) | -0.09 (-0.14, -0.04) | 0.1 (0.05, 0.15) |
| affil | -0.13 (-0.24, -0.03) | -0.05 (-0.16, 0.05) | 0.09 (0.04, 0.15) | 0.1 (0.04, 0.16) |
| social\_excl | -0.17 (-0.29, -0.06) | -0.15 (-0.26, -0.05) | -0.02 (-0.08, 0.04) | 0.03 (-0.03, 0.09) |
| peer\_victim | -0.19 (-0.31, -0.09) | -0.14 (-0.26, -0.05) | 0.04 (-0.01, 0.09) | 0 (-0.06, 0.06) |

Note. C = child; P = parent; IN = internalizing; EX = externalizing; CO = co-occurring; B = bifactor; FFS = fight/flight/freeze; depmood = depressed mood; surge = surgency or high intensity pleasure; rewres = reward responsiveness; frust = frustration; aggres = aggression; ppd = perceived peer delinquency; rule = rule breaking; aggr = aggression; atten = attention; inhib = inhibitory control; actct = activational control; excl = exclusion; victim = victimization.

**Replication over Time in Differences in Spearman’s** $ρ$

**Child Differences in Spearman’s** $ρ.$ Differences between specific internalizing symptoms and internalizing symptoms in the 2FM were also consistent with 78% of the differences replicating across waves. Most of the differences that did not replicate increased discriminant validity for specific internalizing symptoms at later waves. Differences between specific externalizing symptoms in the bifactor model and externalizing symptoms in the 2FM were associated with 76% replication. Over time, the convergent validity of externalizing in the 2FM increased relative to specific externalizing symptoms but discriminant validity of specific externalizing symptoms improved relative to externalizing symptoms in the 2F. Differences between co-occurring symptoms and internalizing symptoms in the 2FM were associated with 86% replication across the waves. Results suggest an increase in convergent and discriminant validity for co-occurring symptoms across the waves. Differences between co-occurring symptoms and externalizing symptoms in the 2FM were associated with 72% replication across the waves. These differences across the waves suggest an increase in convergent and discriminant validity for co-occurring symptoms and externalizing symptoms in the 2FM over time.

**Parent Differences in Spearman’s** $ρ.$Differences between specific internalizing symptoms and internalizing symptoms in the 2FM were consistent with 83% of the differences replicating across waves. Differences between specific externalizing symptoms and externalizing symptoms in the 2FM were associated with 76% replication. Similar to the child model, differences across waves improved the convergent validity of externalizing in the 2FM relative to specific externalizing symptoms but improved discriminant validity of specific externalizing symptoms relative to externalizing symptoms in the 2F. Differences between co-occurring symptoms and internalizing symptoms in the 2FM were associated with 86% replication across the waves. Results suggest an increase in convergent and discriminant validity for co-occurring symptoms across the waves. Differences between co-occurring symptoms and externalizing symptoms in the 2FM were associated with 72% replication across the waves. Differences over time suggest an increase in convergent and discriminant validity for co-occurring symptoms and externalizing symptoms in the 2FM.

1. Here, and in the remainder of the Introduction, “indexed predominantly by” refers to the items with the highest loadings. [↑](#footnote-ref-1)