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Factor Structure of the Children's Behavior Questionnaire in Children with Williams Syndrome

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Abstract

To examine the factor structure of temperament in 5 – 10-year-olds with Williams syndrome (WS), an exploratory factor analysis was conducted on the responses of parents of 192 children on the Children's Behavior Questionnaire (CBQ). Four factors were identified. Two corresponded to factors reported for typically developing children: Effortful Control and Extraversion/Surgency and two corresponded to the temperament constructs of withdrawal/inhibition and irritability/frustration and activity, observed in typically-developing infants. Parents of 109 of the 192 participants also completed the Anxiety Disorders Interview Schedule, Parent version. Children with an anxiety disorder other than specific phobia differed significantly from children without an anxiety disorder on all factors except Extraversion/Surgency. Children with ADHD differed significantly from children without ADHD on Effortful Control and Extraversion/Surgency.

Keywords

temperament; Williams syndrome; developmental disorders; psychopathology; intellectual disability

The study of temperament provides a framework for integrating the cognitive and affective domains of functioning and relating them to underlying reactionary and regulatory systems. This allows us to examine the individual as an integrated system with a range of strengths and weaknesses related to affective-motivational abilities (Rothbart & Derryberry, 1981). Based on caregivers' responses on the Children's Behavior Questionnaire (CBQ; Rothbart & Ahadi, 1994; Rothbart, Ahadi, Hershey, & Fisher, 2001), Rothbart et al. (2001) identified three temperament factors in typically developing (TD) children: positive emotional reactivity [Extraversion/Surgency (S)], negative emotional reactivity [Negative Affectivity (NA)], and self-regulatory mechanisms of attention [Effortful Control (EC)].

Studies of temperament may also provide insight into developmental psychopathology. For example, researchers have shown that very young behaviorally inhibited children with TD

are likely to develop anxiety disorders later in childhood (e.g., Degnan & Fox, 2007). While considerable research has been conducted examining temperament and temperamental factors in TD children, relatively little research has been dedicated to examining this topic in children with genetic disorders. There is increasing evidence that many genetic disorders are associated not only with specific medical and cognitive phenotypes but also with particular patterns of behavioral traits. Investigations of temperamental characteristics in individuals with developmental disorders of known genetic etiology may provide an important source of information regarding gene-brain-behavior relations, offering insight into the intricacies of these constructs beyond what can be learned from typical development. In the present study, we focused on one such disorder, Williams syndrome (WS), which is caused by a microdeletion of ~25 genes on chromosome 7q11.23 (L. R. Osborne, Joseph-George, & Scherer, 2006).

WS is associated with mild to moderate intellectual disabilities or learning difficulties, a characteristic facies, heart disease, infantile hypercalcemia, and failure to thrive in infancy (e.g., Morris, 2010). The cognitive phenotype for WS includes relative strengths in verbal short-term memory and language and considerable weakness in visuospatial construction (e.g., Mervis et al., 2000; Mervis & John, 2010). The behavioral and emotional characteristics of individuals with WS have been considered in a number of studies and a variety of problem behaviors (e.g., distractibility, restlessness) and personality characteristics (e.g., social disinhibition, mood swings, anxiety) has been identified (e.g., Dykens, 2001; Einfeld et al., 1997, 1999, 2001; Klein-Tasman & Mervis, 2003; Leyfer et al., 2006; Tomc et al., 1990; Tonge & Einfeld, 2003).

Several research groups have focused on the temperament and personality characteristics of individuals with WS. Tomc, Williamson, and Pauli (1990) used Thomas and Chess's (1977) approach to examine the temperament of 1 – 12-year-olds with WS. They found that children with WS displayed higher levels of activity, approach, intensity, negative mood, and distractibility and lower levels of rhythmicity, adaptability, persistence, and threshold of excitability than did a sample of TD children matched on mental age.

In Van Lieshout, De Meyer, Curfs, and Frys's study (1998), parents of children and adolescents with WS, fragile-X syndrome, or Prader-Willi syndrome as well as control groups of TD children matched to each of the syndrome groups for chronological age (CA) and gender completed the Dutch translation of the California Q-set (Block & Block, 1980), a Big Five measure of personality. The WS group exhibited significantly higher Agreeableness scores than did either the Prader-Willi or the fragile X groups. The WS group also had significantly lower scores on Conscientiousness, Emotional Stability, and Motor Activity and significantly higher scores on Irritability than did the TD control group.

Klein-Tasman and Mervis (2003) used the CBQ (Rothbart & Ahadi, 1994) and the Multidimensional Personality Questionnaire – Parent Version (MPQ; Tellegen, 1985) to compare personality characteristics of children with WS aged 8 – 10 years to those of a comparison group of children with developmental disabilities (DD) of mixed etiology matched for CA and IQ. The children with WS were significantly less shy, more gregarious, less dominant, more empathic, more sensitive, and more tense than the comparison group.

Overall, previous studies of personality and temperament characteristics in WS have identified a distinct personality profile. Systematic characterization of the personality and temperament characteristics of individuals with WS is likely to be useful not only for further identifying the behavioral phenotype of individuals with this syndrome but also for advancing knowledge about the emergence of these traits in TD children by providing information regarding the relations between specific genes and particular characteristics. In

particular, because WS is caused by a known deletion of ~25 genes, characterizing temperament in this syndrome is likely to contribute to understanding of the influence of genes and temperament on psychopathology in WS. In turn, this knowledge may contribute to an understanding of the emergence of psychopathology in children in the general population.

Most temperament measures have been developed for TD individuals and their validity for groups with DD has not been established. The purpose of the present study was to determine the factor structure of one of the most frequently used measures of child temperament, the CBQ, for children with WS and to compare this structure to that reported for TD children (e.g., Rothbart et al., 2001).

Methods

Participants

Participants were 192 children (87 boys, 105 girls) with genetically confirmed WS, ranging in age from 5.01 – 10.94 years ($M = 7.28$ years, $SD = 1.75$ years). The racial/ethnic composition of the sample was: 83% White non-Hispanic, 8% White Hispanic, 1% Black/African-American non-Hispanic, and 8% biracial non-Hispanic. The socioeconomic status (SES) composition of the sample was: 90% middle SES, 8% low SES, and 2% high SES. Many of the children were participating in a longitudinal study; for these children, data from the first time the parent completed the CBQ after the child turned 5 years old were used. 183 of the participants had completed the Kaufman Brief Intelligence Test (K-BIT; Kaufman & Kaufman, 1990). Mean Composite IQ on this measure (which assesses verbal and nonverbal reasoning abilities but does not assess visuospatial construction) was 75.59 ($SD = 15.32$) with a range from 40 (lowest possible IQ on this measure) to 114. All parents signed informed consent forms. The study was approved by the Institutional Review Board of the University of Louisville.

Measures

Children's Behavior Questionnaire (CBQ; Rothbart & Ahadi, 1994; Rothbart et al., 2001)—The CBQ Long Form (Rothbart & Ahadi, 1994) is a 327-item parent-report measure. Parents are asked to rate each item on a scale from 1 (“extremely untrue of your child”) to 7 (“extremely true of your child”). The CBQ Standard Form (Rothbart et al., 2001), which includes 195 items and 15 scales, was extracted from the CBQ Long Form and used for the analyses, in order to maintain comparability with Rothbart et al. (2001). Rothbart et al.'s (2001) factor analytic study of the CBQ Standard Form for TD children yielded three factors corresponding to three broad dimensions of temperament: S, NA, and EC.

Anxiety Disorders Interview Schedule, Parent version (ADIS-P; Silverman & Albano, 1996)—The ADIS-P is a semi-structured interview based on DSM-IV criteria designed to diagnose anxiety and related disorders, including attention deficit hyperactivity disorder (ADHD), in children and adolescents aged 4 – 16 years (Silverman, 1994). Silverman, Saavedra, and Pena (2001) have found excellent reliability for separation anxiety disorder, social phobia, specific phobia, and GAD as well as excellent test-retest reliability for the interview. The appropriateness of the ADIS for children with DD has been demonstrated by Leyfer et al. (2006).

Procedure

The parents of 192 children completed the CBQ. In addition, the parents of 109 of the 192 children completed the ADIS-P interview according to the standard procedures. For these

children, the parent who completed the CBQ also completed the ADIS-P interview; in some cases, the spouse also participated in the ADIS-P interview. The internal consistency of each CBQ Standard-Form scale was examined using Cronbach's alpha. An exploratory factor analysis including all scales with Cronbach's alpha $\geq .70$ was conducted using SPSS version 18.

Results

Internal Consistency

Cronbach's alpha for each of the CBQ Standard Form scales was calculated for the entire sample. Following George and Mallery (2003), internal consistency was considered acceptable if Cronbach's alpha was $\geq .70$. For 10 of the 15 scales, acceptable internal consistency was obtained with all items on each scale included. For two additional scales (Discomfort and Fear), acceptable internal consistency was obtained after one item was removed from each scale. Thus, as shown in Table 1, internal consistency was acceptable for 12 of the 15 scales. The mean, standard deviation (*SD*), and range for parental ratings on each scale are also included in Table 1.

Exploratory Factor Analysis

Exploratory factor analysis using maximum likelihood with oblimin rotation was conducted to examine the factor structure of the CBQ for children with WS. The scales with lower than acceptable Cronbach's alpha were excluded from the analysis. Four factors emerged with eigenvalues greater than 1. The goodness of fit test indicated a satisfactory fit for the model [$\chi^2(24) = 26.30, p = .34$]. The four-factor solution is presented in Table 2. Factor 1 was closely related to EC. Factor 2 included items related to NA/behavioral inhibition. Factor 3 included items related to S/Positive Affectivity (PA). Factor 4 was related to reactivity and excitability.

Relation between Temperament and Psychopathology in WS

The factors were examined in the subsample of 109 children whose parents had also completed the ADIS-P interview. Based on models of emotional disorders in the general population (e.g., Brown, Chorpita, & Barlow, 1998; Chorpita, Plummer, & Moffitt, 2000; Nigg, 2006), we hypothesized that lower scores on Factor 1 (EC), higher scores on Factor 2 (NA), and higher scores on Factor 4 (reactivity/excitability) would be associated with the presence of an anxiety disorder diagnosis as established by the ADIS-P (Silverman & Albano, 1996). We did not expect significant between-group differences on Factor 3 (S/PA) in this sample, because results of prior studies of children in the general population (e.g., Chorpita et al., 2000) have indicated that PA is specifically linked to the diagnoses of Social Phobia and Depression, and none of the children in the present sample was diagnosed with either of these disorders. We also hypothesized that Factors 1 (EC) and 4 (reactivity/excitability) would be related to a diagnosis of ADHD.

To examine the association between anxiety disorders and Factors 1 through 4, all children were coded as "0" (no anxiety disorder) or "1" (anxiety disorder) based on their diagnosis on the *ADIS-P* interview, and independent *t*-tests were conducted to compare the factor scores between the two groups. Of the 109 children, 76 (69.7%) were diagnosed with at least one anxiety disorder. As predicted, there was a significant difference between the No-Anxiety Disorder group and the Anxiety Disorder group on Factor 1, with the Anxiety Disorder group having a significantly lower mean score ($M = -.17, SD = .88$) than did the No-Anxiety Disorder group ($M = .51, SD = .96$) [$t(107) = 3.96, p < .001$; Cohen's $d = .74$]. There was no significant difference in the factor scores between the No-Anxiety Disorder group and the Anxiety Disorder group on any of the remaining factors: Factor 2 ($M = -.27$,

$SD = .76$ and $M = -.11$, $SD = .94$, respectively; $p = .36$; Cohen's $d = -.18$), Factor 3 ($M = .33$, $SD = .82$ and $M = .08$, $SD = .85$, respectively; $p = .15$; Cohen's $d = .30$), and Factor 4 ($M = .20$, $SD = .72$ and $M = -.04$, $SD = .76$, respectively, $p = .13$; Cohen's $d = .32$).

Most of the children in the Anxiety Disorder group had specific phobia and for the majority of the children in that group, specific phobia was their only anxiety diagnosis (Leyfer et al., 2006, 2009). However, recent studies of models of emotional disorders have excluded specific phobia (e.g., Brown, 2007; Brown et al., 1998). To better compare the findings for children with WS to those predicted by these models, we re-ran the analyses, excluding the children whose only anxiety disorder diagnosis was specific phobia. Consistent with the findings for the original Anxiety Disorder group (which included all children with any anxiety disorder), the mean score for Factor 1 was significantly lower for the Anxiety Disorder Other Than Specific Phobia group ($n = 18$, $M = -.21$, $SD = .77$) than for the No-Anxiety group ($n = 33$, $M = .57$, $SD = .96$) [$t(49) = 2.97$, $p = .005$; Cohen's $d = .85$]. As predicted, there also were significant between-group differences on Factors 2 and 4 but not on Factor 3. The mean for Factor 2 was significantly higher for children in the Anxiety Disorder Other Than Specific Phobia Group, ($M = .41$, $SD = .93$) than for the No-Anxiety Group ($M = -.41$, $SD = .76$) [$t(49) = -3.40$, $p = .005$; Cohen's $d = -.97$]. The mean score for Factor 4 also was significantly higher for the Anxiety Disorder Other Than Specific Phobia group ($M = .44$, $SD = .69$) than for the No-Anxiety group ($M = -.13$, $SD = .80$) [$t(49) = -2.54$, $p = .01$; Cohen's $d = -.73$]. As expected, no significant difference was found for the mean score for Factor 3 between the Anxiety Disorder Other Than Specific Phobia group ($M = .26$, $SD = .85$) and for the No-Anxiety group ($M = .10$, $SD = .79$) [$t(49) = -.66$, $p = .51$; Cohen's $d = .19$].

To examine the association between Factors 1 and 4 and ADHD, all children were coded as "0" (no ADHD) or "1" (ADHD), according to whether or not they were diagnosed with ADHD based on the *ADIS-P* interview. Of the 109 children, 69 (63%) were diagnosed with ADHD. Independent t -tests were conducted to compare the factor scores of the two groups. As predicted, the mean score for Factor 1 was significantly lower for the ADHD group ($M = -.26$, $SD = .86$) than for the No-ADHD group ($M = .56$, $SD = .91$) [$t(107) = 4.73$, $p < .001$; Cohen's $d = .91$]. Also as predicted, the mean score for Factor 4 was significantly higher for the ADHD group ($M = .18$, $SD = .82$) than for the No-ADHD group ($M = -.26$, $SD = .80$) [$t(107) = -2.78$, $p = .006$; Cohen's $d = -.54$]. To determine if the two factor scores differed as a function of type of ADHD, we compared the factor scores of the Inattentive-Type group ($n = 40$) to those of the Combined-Type group ($n = 25$). (The 3 children with Hyperactive-Type ADHD were excluded from the analyses.) No significant difference was found between the two groups on either factor [$t(63) = -1.06$, $p = .29$; $t(63) = -0.38$, $p = .70$, respectively].

Discussion

Previous studies of children with WS have pointed toward a unique personality profile characterized by gregariousness, anxiety, and low inhibitory control that is clearly distinguishable from comparison groups of children with DD of mixed etiologies (e.g., Klein-Tasman & Mervis, 2003). In the present study we determined the factor structure of the CBQ Standard Form, one of the most frequently used measures of child temperament, for children with WS and compared the findings to those of Rothbart et al. (2001). In a factor analysis of the CBQ Standard form using maximum likelihood, four factors emerged that contained CBQ scales with high internal consistency and represented different aspects of temperament. These findings suggest that the CBQ is able to provide unique information about various aspects of behavior in children with WS and that it can be used in further studies focusing on temperament in WS. The relation of the factors to categories of

childhood psychiatric disorders was confirmed using diagnoses from a DSM-IV-based structured diagnostic interview with good psychometric properties. In the remainder of the Discussion, we first address the factor structure of the CBQ for children with WS and its similarity to the structure reported by Rothbart et al. (2001). We then focus on the implications of these findings for psychopathology in children with WS as well as in TD children.

Internal Consistency

Examination of the internal consistency of the CBQ scales for the current sample of 192 children with WS demonstrated similar results to those found by Rothbart et al. (2001). However, unlike Rothbart et al. (2001), we excluded the scales with Cronbach's $\alpha < .70$ (Impulsivity, Sadness, and Low Intensity Pleasure) from the factor analysis (following the recommendation of George & Mallery, 2003). Additionally, unlike Rothbart et al. (2001) who conducted a principal components analysis, we conducted a factor analysis, because factor analysis discriminates between the shared and unique variance of the variables and only analyzes shared variance. Hence, unlike principal components analysis, factor analysis does not inflate the values of the variance accounted for by the analysis (Costello & Osborne, 2005)¹.

Factor Structure

In the present study, we identified four factors underlying the factor structure of the CBQ for children with WS. In Figure 1 we compare the factor structure found in children with WS to that described by Rothbart et al. (2001) for children with TD and the infant temperament dimensions identified by Rothbart and Mauro (1990). Factor 1 included two of the three scales that loaded onto Rothbart et al.'s (2001) dimension of EC, namely Attentional Focusing and Inhibitory Control. Factor 3 contained a negative loading of Shyness and positive loadings of Positive Anticipation and Smiling, three of the five scales in the S factor identified by Rothbart et al. (2001).

Factors 2 and 4 differed somewhat from the factors reported by Rothbart et al. (2001). Specifically, in TD children, Rothbart et al. (2001) identified the dimension of NA, which included positive loadings of Positive Anticipation, Discomfort, Fear, and Anger and a negative loading of Soothability. In our sample, however, the scales associated with the NA dimension split onto Factors 2 and 4. Factor 2 included positive loadings of Positive Anticipation, Discomfort, and Fear from Rothbart et al.'s NA factor, a positive loading of Perceptual Sensitivity from Rothbart et al.'s EC factor, and a negative loading of High Intensity Pleasure from Rothbart et al.'s S factor (which has a positive loading on Rothbart's S factor). Factor 4 contained the remaining two scales from Rothbart et al.'s (2001) NA dimension, i.e., a positive loading of Anger and a negative loading of Soothability, and two scales from Rothbart et al.'s S dimension, i.e., a positive loading of High Intensity Pleasure and a positive loading of Activity.

As shown in Figure 1, the temperament factors found for WS also show conceptual similarity to some of the temperament dimensions identified in TD infants (Rothbart & Mauro, 1990). For example, Factor 2 shows considerable similarity to the Fearful distress / Withdrawal dimension. Factor 4 is similar to the Activity and Irritability/Frustration temperament dimensions (Rothbart & Mauro, 1990) and to the construct of "reactive control" (Derryberry & Rothbart, 1997), which refers to the child's capacity to adjust

¹When we conducted a principal component analysis using the same data, there was almost no difference in the resultant factor solution, as expected (Costello & J. Osborne, 2005).

emotional reactions and emotion-driven behaviors based on the demands of the situation and, unlike EC, is relatively automatic (Nigg, 2001).

The identification of separate factors for effortful control (Factor 1) and reactive control (Factor 4) in children with WS, while different from the findings of Rothbart et al. (2001), is consistent with other conceptualizations of temperament in TD children. For example, Eisenberg and Morris (2002) argued that effortful and reactive control should be distinguished from each other, as effortful control is voluntary while reactive control is not.

Although the similarity of the factors found for 5 – 10-year-old children with WS to the dimensions described for infants with TD may seem surprising, it is important to remember that measurable temperament dimensions change across the lifespan as a result of developmental changes in the systems that underlie these dimensions (Rothbart et al., 2000). It is likely that these developmental changes are delayed in children with WS, resulting in a temperament structure that overlaps that in TD infants (Figure 1). Previous findings indicating that the WS phenotype is associated with sensory modulation abnormalities, executive functioning deficits, and high rates of anxiety (e.g., Atkinson & Braddick, 2011; John & Mervis, 2010; Klein-Tasman & Mervis, 2003; Leyfer et al., 2006) lend further support for such delays in children with WS.

Association between the Factors and Psychiatric Diagnoses

When children with a diagnosis of any anxiety disorder were included in the Anxiety group, Factor 2 (corresponding to the infant temperament dimension of Fearful Distress and containing three of the five NA subscales) was not related to the presence of an anxiety disorder in children with WS. At first glance, this result appears inconsistent with recent models of emotional disorders, which suggest that neuroticism/NA is instrumental in the etiology of anxiety and depressive disorders (e.g., Brown, 2007; Brown et al., 1998). This apparent inconsistency is likely due to the fact that the majority of the children with WS with an anxiety disorder had a diagnosis only of specific phobia, an anxiety diagnosis that has not been included in studies of models of emotional disorders in the general population. Consistent with this explanation, when we re-ran the analyses excluding the children whose only anxiety diagnosis was specific phobia, the WS anxiety group evidenced a significantly higher Factor 2 score than did the no-anxiety group. Longitudinal studies of children with WS would allow examination of whether higher Factor 2 scores in childhood predict anxiety and depression later in life. Similarly, studies including children with WS who had diagnoses of social phobia and/or depression would allow for comparison of the association between Factor 2 and these disorders to published findings for the children in the general population (e.g., Chorpita et al., 2000). Both these diagnoses, however, are very rare for children with WS (Leyfer et al., 2006, 2009).

Our findings of a significant negative relation between Factor 1 and any ADIS anxiety disorder diagnosis and a significant positive relation between the presence of an ADIS anxiety disorder other than specific phobia and Factor 4 suggest a link between anxiety disorders and both low EC and low reactive control in children with WS. Although most studies examining the developmental psychopathology of anxiety in children have focused on the role of high levels of behavioral inhibition in the development of anxiety disorders, researchers also have identified a relation between EC and anxiety for children in the general population (e.g., Lonigan, Vasey, Phillips, & Hazen, 2004). Lonigan et al. (2004) proposed that EC moderates the relation between NA and anxiety. Additionally, several studies have found low levels of EC and high levels of NA in children with internalizing symptoms (e.g., Anthony, Lonigan, Hooe, & Philips, 2002; Eisenberg et al., 2001). A relation between difficulty with behavior regulation and anxiety also has been reported for 6

– 16-year-olds with WS (Woodruff-Borden, Kistler, Henderson, Crawford, & Mervis, 2010).

Not surprisingly, Factors 1 and 4, comprising scales related to EC and reactivity, were associated with ADHD. These results are consistent with previous studies of temperament and ADHD focused on children in the general population (Goldsmith et al., 2004; Martel & Nigg, 2006; Valiente et al., 2003). For example, Martel and Nigg (2006) found that low reactive control was associated with hyperactive-impulsive symptoms of ADHD and low EC was associated with inattentive symptoms of ADHD. We found no difference between Factor 1 and Factor 4 scores in our sample as a function of the type of ADHD. However, this could be due to the fact that we did not have a comparison group with Hyperactive symptomatology alone.

Implications and Future Directions

The factor structure of the CBQ in WS bears considerable similarity to the factor structure found by Rothbart et al. (2001) for children in the general population. At the same time, the WS data also fit the temperament dimensions identified in TD infants (Rothbart & Mauro, 1990) and the temperament model proposed by Eisenberg and colleagues, which differentiates between effortful and reactive control (e.g., Eisenberg & Morris, 2002). The associations between different aspects of temperament and psychopathology were consistent with those expected based on theories of emotional disorders and findings in the general population.

Studies of psychopathology in WS have already demonstrated a high prevalence of anxiety disorders and ADHD in comparison to TD children and children with other DDs (Leyfer et al., 2006, 2009). WS is caused by a deletion of a small set of genes, one or more of which may be associated with components of the specific temperament profile and with the increased rates of psychopathology. These genes may also be implicated in temperament and psychopathology in TD children. If so, WS may provide a model case for the study of genotype/phenotype relations and the developmental psychopathology of anxiety and ADHD in the general population. It is in studying these characteristics that we will continue to uncover the unique contributions of genes, the brain, the environment, and the transactions among genes and environment to behavior. Longitudinal studies of children with WS will help to further delineate pathways to childhood psychopathology both in TD children and in children with DD. Comparison of the current analyses for children with WS to parallel analyses for children with other specific etiologies of intellectual disability would be particularly helpful for further identification of genotype/phenotype relations characterizing temperament and psychopathology.

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Figure 1.

Comparison of the factor structure found in children with WS to that described by Rothbart et al. (2001) for children with TD and the infant temperament dimensions identified by Rothbart and Mauro (1990) for infants with TD. Scales loading greater than or equal to .40 were included from Rothbart et al. (2001).

Table 1

Internal Consistency of the CBQ-Standard Form Scales

Scale	Alpha	Mean	SD	Range
Activity Level	.77	4.69	.84	2.54 – 6.77
Anger/Frustration	.73	4.72	.85	2.08 – 6.83
Positive Anticipation	.76	5.80	.60	3.69 – 6.92
Attentional Focusing	.72	2.94	.77	1.40 – 6.00
Discomfort	.70	4.61	.90	2.10 – 6.82
Fear	.71	4.06	.91	1.36 – 6.40
High-Intensity Pleasure	.73	4.16	.97	1.64 – 6.64
Impulsivity	.69	5.08	.68	3.17 – 7.00
Inhibitory Control	.82	3.51	.90	1.33 – 5.73
Low-Intensity Pleasure	.68	5.54	.62	3.55 – 6.83
Perceptual Sensitivity	.79	4.79	1.06	2.00 – 6.91
Sadness	.69	4.45	.82	2.09 – 6.36
Shyness	.84	2.02	.76	1.00 – 5.23
Smiling/Laughter	.79	5.81	.61	3.92 – 7.00
Soothability	.75	4.49	.86	2.00 – 6.55

Table 2

CBQ Factor Loadings

Scale	Factor 1	Factor 2	Factor 3	Factor 4
Inhibitory Control	.845	.082	.070	-.235
Attentional Focusing	.591	-.014	-.042	.088
Fear	-.006	.619	-.018	.025
Perceptual Sensitivity	.269	.593	.375	.035
Discomfort	-.023	.585	-.048	.054
Smiling/Laughter	.131	.066	.736	-.049
Shyness	.110	.068	-.485	.001
Positive Anticipation	-.321	.402	.453	.023
Anger	.001	.237	-.144	.591
High Intensity Pleasure	.102	-.461	.236	.582
Soothability	.209	-.301	.214	-.475
Activity	-.307	-.117	.245	.407