INTERNALIZING SYMPTOMS AND PERSONALITY COLOR PARENTAL REPORTS OF CHILD TEMPERAMENT

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ABSTRACT

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Depressed mothers have negatively distorted views of the personalities and behaviors of their children. This is potentially problematic as parental reports of child behavior are a popular method of collecting data on children. The current study sought to extend the existing literature by investigating the degree to which internalizing symptomology and personality traits influence both mothers' *and* fathers' reports of their child's temperament. This was done by applying the tri-factor model (Bauer et al., 2013) to data collected from the parents of 222 children (ages 3-5 years). Personality and psychopathological symptoms were related to both mothers' and fathers' perspectives of their children. However, the effects varied somewhat across dimensions of child temperament, and mothers and fathers. These results support concerns that psychological characteristics influence parental perceptions of their children. This work provides guidance regarding the contexts in which parents' may be biased informants of child temperament.

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Introduction

Childhood temperament represents the foundation of adult personality (Shiner & DeYoung, 2013). Research on temperament therefore has the potential to both contribute to basic knowledge about human development, and inform programs and policies designed to promote positive outcomes across the lifespan (Moffitt et al., 2011). However, for this potential to be realized, researchers must be confident that individual differences in temperament are adequately assessed. This has proven to be a challenge, and debates over the assessment of temperament have generated decades of research and commentary.

One of the more contentious issues is the usefulness of parent reports of child temperamental attributes. A frequently levied criticism is that parents are biased informants, prone to over- or under-report certain behaviors. These criticisms have been fueled, in part, by the recurrent observation that mothers' and fathers' reports only correspond to a moderate degree (e.g., Duhig et al., 2000). Moreover, certain parental characteristics might accentuate general reporting biases, and thus contribute to greater disagreement between parents regarding the attributes of their children. A number of investigations have evaluated whether depressive symptomatology represents one source of parental bias (Richters, 1992). This work indicates that depressed mothers' may provide overly negative reports of their children (e.g., Muller, Achtergarde, & Furniss, 2011). The goal of the current study was to extend existing work on depression and the parent report method by examining the extent to which different kinds of internalizing symptomatology and personality traits relate to disagreement between maternal and paternal informants of temperament. This was done by applying the trifactor model – a latent

variable model that can efficiently isolate rater specific biases (Bauer et al., 2013) - to the parental ratings of 222 young (3-5 years) children.

Temperament and Its Assessment

The term "temperament" refers to the constitutionally based individual differences in reactivity and self-regulation that emerge early in life (Rothbart, 2011). There are a number of approaches for classifying the diverse array of individual differences evident in children. One prominent model posits that temperament during early childhood (age 3 to 7 years) can be characterized at the highest level by three broad dimensions: Effortful Control, Negative Affectivity, and Surgency (Rothbart, 2011). The dimension of Effortful Control captures an individual's ability to control their attention and impulses, and regulate their emotional reactions (Rothbart, 2011). The dimension of Negative Affectivity captures an individual's tendency to experience fear, anger, and other types of psychological distress (Rothbart, 2011). Last, the domain of Surgency captures how likely individuals are to experience positive emotions and rapidly approach potential rewards (Rothbart, 2011).These three dimensions of temperament are roughly analogous to the "Big 3" dimensions of Constraint, Negative Emotionality, and Positive Emotionality described in the adult personality literature (Tellegen & Waller, 2008).

Approaches to assessing temperament tend to fall into one of three broad categories: informant report, home observation, and laboratory assessment (Rothbart & Goldsmith, 1985). Informant report refers to when researchers ask individuals familiar with the target child (e.g., parents, teachers) to answer questions about that child's behavior. In home observation, a trained researcher/research assistant spends time in the target child's home, observes their behavior in a variety of situations, and codes that behavior. Finally, for laboratory assessment, children are

brought into a lab and their behaviors are observed and coded across controlled situations designed to elicit certain trait-relevant behaviors and emotions.

Of the various approaches to assessing child temperament/behavior, using parents as informants is the most popular (Goldsmith & Gagne, 2012). This is understandable considering that parent reports are quick, inexpensive, and relatively easy to obtain. Furthermore, parental reports may be more ecologically valid than the other methods of assessment (e.g., Rothbart & Goldsmith, 1985; but see Lo, Vroman, & Durbin, 2015). Despite these advantages, the parent report method has often been criticized on the grounds that parents might be biased informants of child behavior (Seifer, 2002).

Informant Disagreement

Criticisms of the parent report method are often motivated by the finding that parent reports of temperament are only modestly (at best) correlated with alternative methods for assessing temperament. For example, parental reports converge only modestly (*r*s around .01 - .30) with other approaches means of assessing child behavior, such as home observation and laboratory assessment (e.g., Bates & Bales, 1982; Durbin & Wilson, 2012; Gartstein & Marmion, 2008; Sameroff, Seifer, & Elias, 1982; Seifer, Sameroff, Dickstein, Schiller, & Hayden, 2004; Vaughn, Bradley, Joffe, Seifer, & Barglow, 1987; Vaughn, Taraldson, Crichton, Egeland, 1981).Furthermore, parents' reports of temperament tend to correlate only somewhat with other informants' reports. Achenbach and colleagues (1987) meta-analyzed over 119 studies that included multiple informants of childhood behavior problems and found varying, yet generally moderate, levels of agreement between various informants (e.g., $r = .60$ between parents, $r = .27$ between parents and teachers, $r = .24$ between parents and mental health workers). Agreement tended to be higher for more overt behaviors such as hyperactivity and

aggression (e.g., r = .32 between parents and teachers), than convert behaviors such as anxiety and depression (e.g., r = .21 between parents and teachers). Another meta-analysis - exclusively looking at agreement between mothers and fathers - found moderate correlations between parents' reports of problem behavior (r = .46-.66; Duhig, Renk, Epstein, & Phares, 2000). When investigating parental agreement on fifteen scales designed to measure child temperament, Rothbart and colleagues (2001) reported only moderate correspondence (most *rs* between .3 and .4).

Although these studies reveal that mother-father agreement is generally higher than agreement between a parent and a non-parent informant (Achenbach, McConaughy, & Howell, 1987; Duhig et al., 2000), the degree of correlation between parents still usually only hovers in the .3 to .6 range. This range is comparable to results from a meta-analysis of inter-rater agreement on the Big Five personality traits (Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness) in adulthood (Connelly & Ones, 2010), and raises questions about moderators of agreement (see Funder, 2012). If systematic causes for disagreement between informants can be identified, this information could be leveraged to enhance the quality of parental reports of temperament.

Several models of cross informant agreement have been proposed in the literature (e.g., De Los Reyes & Kazdin, 2005; Funder, 2012; Kenny, 1994). One insight common across these models is that certain informant characteristics are likely to increase inter-informant disagreement. Thus, one promising avenue for understanding disagreement is to investigate the characteristics of raters that may lead to differences in their ratings. Parental psychopathology, particularly depressive symptomatology, has often been proposed as an informant characteristic that might serve to bias reports, and thus increase disagreement between informants.

Depression and Parents' Reports

Several concerns have been raised about the validity of the reports of child behavior obtained from depressed parents. The two traditionally competing models in this area are known as the depression distortion model, and the accuracy model (Fergusson, Lynskey, & Horwood, 1993; Richters, 1992). The distortion model proposes that depressive symptomatology warps parental views such that maladaptive child behaviors are over-reported. Conversely, the accuracy model posits that depressed parents are actually more accurate informants than their non-distressed peers (Fergusson et al., 1993; Richters, 1992). The accuracy model is in part based on the ideas that the typical way of viewing offspring is with a positive bias (e.g., Seifer et al., 2004), and that the children of depressed parents really do have more behavior problems.

Generally speaking, empirical evidence has tended to converge on the depression distortion model, suggesting that depressive symptomology does indeed bias maternal reports to some degree (e.g., Boyle & Pickels, 1997; Durbin & Wilson, 2012; Fergusson et al., 1993; Leerkes & Crockenberg, 2003; Muller, Achtergarde, & Furniss, 2011 Najman et al., 2000; Youngstrom, Loeber, & Stouthamer-Loeber, 2000). Although the preponderance of evidence supports the depression distortion model, several details remain unclear. For example, how large is the depression-distortion effect? Some studies indicate that depression considerably distorts maternal reports (e.g., Muller, Achtergarde, & Furniss, 2011), yet others have suggested that the effect may be only modest in size (e.g., Briggs-Gowan, Carter, & Schwab-Stone, 1996). Furthermore, there is the issue of what kinds of child behaviors are most likely to be distorted by depressive symptoms - all behaviors, or only particular ones? Gartstein and colleagues (2009) found support for the depression distortion model exclusively in gender stereotyped problem behaviors; depressed mothers over-reported sons' externalizing, and daughters' internalizing,

behaviors, but not vice-versa. Additionally, the existing work leaves open the issues of whether fathers' reports are also affected by depressive symptomatology, and if other parental characteristics besides depression can distort parental views.

Work on the depression distortion model is limited by a somewhat narrow focus on maternal informants and depressive symptomatology. Extending the boundaries of this model is important for increasing the quality of temperament assessment. The underrepresentation of fathers is not unique to the depression distortion literature (Phares, 1992; Phares, Fields, Kamboukos, & Lopez, 2005), but it is problematic because fathers are frequently used as informants of child behavior alongside mothers (Duhig et al., 2000). Additionally, many of the potential mechanisms underlying the depression distortion effect (e.g., preferential attention to negative stimuli, greater recall of negative events; Gelfand & Teti, 1990; Mathews & MacLeod, 2005; White & Barrowclough, 1998) may not be unique to depression per se (Chan, Goodwin, & Harmer, 2007; Isbell, 2013). For example, Youngstrom, Izard, and Ackerman (1999) found that general maternal dysphoria (both self-reported and other-observed) was associated with biases in rating children's behavior. Findings such as these raise the possibility that the depression distortion model might also extend to characteristics similar to depression such as anxiety, and general personality attributes like Negative Emotionality.

The Current Study

There were two primary aims of the current study. The first was to evaluate the extent to which depressive symptomatology is related to mothers' *and* fathers' reports of child temperament, and any disagreement between parents. The second was to test whether related constructs such as anxiety, and the personality trait of Negative Emotionality, also relate to parental reports. Finally, in an exploratory effort to understand whether there are parental

attributes not characterized by negative affect that are related to reporting and disagreement, the effects of other parent personality traits (Positive Emotionality and Constraint) were also examined. Associations between parental attributes and parental reports were examined for all three of the broad dimensions of temperament described above (Effortful Control, Negative Affectivity, and Surgency). This allowed for an investigation of whether distortion effects are specific to certain child traits/behaviors.

Method

Participants

The sample comes from the second and third generations of the Family Transitions Project (FTP). The FTP is an ongoing longitudinal study of 559 target individuals (the second generation) and their families of destination in adulthood. The FTP represents a merging of two previously distinct longitudinal studies, the Iowa Youth and Families Project (IYFP), and the Iowa Single Parents Project (ISPP). Participants for the IYFP were initially recruited when they were in seventh grade; to be eligible for participation individuals had to come from a two parent family, and have at least one sibling within four years of age (Neppl et al., 2010). Participants for the ISPP were initially recruited when they were in ninth grade; to be eligible for participation they needed to have come from a family headed by a mother whom had experienced divorce within the past two years, and have a sibling within four years of age (Neppl et al., 2010). The IYFP and ISPP were combined into the FTP in 1994 when the target participants were in 12th grade.

Data for the FTP is collected regularly by trained interviewers who visit the target participants in their home. During these visits targets provide responses to a number of

questionnaires that span a range of topics. Similar information is also collected from individuals close to the target participant, individuals such as parents, siblings, romantic partners, and when available, the target's children (once they are older than 18 months).

The sample used in this study consists of the families of 222 "third generation" children, aged 3-5 years (102 female, 120 male). These children are the offspring of the original FTP targets, and thus the families include one original FTP target, her/his child, and the other parent of the child. In almost all cases, both parental informants are the biological parents of the child. The parent-reported temperament data are taken from when the Child Behavior Questionnaire (CBQ; Rothbart, Ahadi, Hershey, & Fisher, 2001) was first administered to each child. This occurred at age 3 for 190 children, age 4 for 24 children, and age 5 for 8 children. In total there were 211 maternal reports of child temperament, and 186 paternal reports of child temperament. Given the geographic origins of the FTP (rural Iowa), the sample is almost exclusively European American. Furthermore, participants are primarily of middle and lower-middle class background. For a more thorough description of the FTP, IYFP, and ISPP, see Elder and Conger (2000), and Neppl et al. (2010).

Measures

Child Temperament. The Child Behavior Questionnaire (CBQ) is a caregiver report instrument that contains 195 items which tap one of 16 facets of temperament: Activity Level, Anger/Frustration, Attentional Focusing, Attentional Shifting, Discomfort, Falling Reactivity/Soothability, Fear, High Intensity Pleasure, Impulsivity, Inhibitory Control, Low Intensity Pleasure, Perceptual Sensitivity, Positive Anticipation/Approach, Sadness, Shyness, and Smiling/Laughter (see Rothbart et al., 2001 for conceptual definitions). These 16 facets of

temperament are subsumed by the aforementioned superordinate dimensions of Effortful Control, Negative Affectivity, and Surgency (Rothbart et al., 2001).

The CBQ presents respondents with particular behaviors and asks them to rate the degree to which those behaviors were characteristic of the target child over the past six months. Responses are given on a 7-point Likert-type scale that ranges from "1: extremely untrue of your child" to "7: extremely true of your child". A "not applicable" option is provided for if the child has not recently been in the item-relevant situation. Item content was derived both rationally from the conceptual definitions of the 16 facets, and from extensive parental interviews (Rothbart et al., 2001). Items were selected to be developmentally appropriate for children aged 3-8 years. Sample items include, "cries sadly when a favorite toy gets lost or broken", "likes going down high slides or other adventurous activities" and "can lower his/her voice when asked to do so". Scale scores were computed by averaging together a scale's individual items.

Parent Internalizing Symptomatology. The Mini-Mood and Anxiety Symptom Questionnaire (Mini-MASQ) is a 26 item self-report inventory of anxious and depressive symptomatology (Casillas & Clark, 2000). Respondents rate the extent to which they have experienced various symptomatic feelings over the past week on a 5-point Likert-type scale ranging from "1: not at all" to "5: extremely". Items fall into one of four categories: Generalized Distress-Depression, Anhedonic Depression, Generalized Distress-Anxiety, and Anxious Arousal. Sample items include "felt discouraged", "felt like nothing was very enjoyable", and "felt tense or 'high strung'".

Parents' Mini-MASQ data was taken from the same wave of data collection as their child's temperament data. Anhedonic depression and anxious arousal scores were computed by averaging together the items of each respective scale. The items from the generalized distress-

depression and generalized distress-anxiety scales were averaged together to create one "generalized distress" score. A "total distress" score was also computed by averaging together all items of the questionnaire.

Parent Personality. The Multidimensional Personality Questionnaire – Brief Form (MPQ-BF) is a 156 item self-report inventory of personality (Patrick, Curtin, & Tellegen, 2002). The MPQ-BF contains several scales for capturing various facets of personality (e.g. stress reactivity, harm avoidance). Like the CBQ, these scales are subsumed by three higher order dimensions: Negative Emotionality (similar to the CBQ's Negative Affectivity), Positive Emotionality (similar to the CBQ's Surgency), and Constraint (similar to the CBQ's Effortful Control). The items of the MPQ-BF come from the full, 300 item Multidimensional Personality Questionnaire (Tellegen & Waller, 2008). Scale scores derived from the full and brief versions of the MPQ are highly correlated (e.g. .85-.95; Donnellan, Conger, & Burzette, 2007).

The MPQ-BF presents respondents with a trait and asks them to indicate whether they think that that trait is true of them (1), or not true of them (0). Sample items include, "I am tense, nervous, or worried", "I am enthusiastic", and "I remain calm, even in difficult situations". All MPQ-BF data was taken from the tenth wave of data collection (when FTP targets were roughly 27 years old), regardless of the age of the focal child. Personality dimension scores were calculated by averaging together the items of the scales that make up a particular dimension.

Data Analytic Strategy

The primary analyses of this study were based on Bauer and colleagues' (2013) trifactor model (see Figure 1). The trifactor model is an extension of the bifactor model (e.g., Chen, Hayes, Carver, Laurenceau, & Zhang, 2012) that allows for the integration of ratings across multiple informants (Bauer et al., 2013). In this model, the ratings from multiple informants

(e.g., mothers and fathers) are used as indicators of three major types of latent factors. The first is a general consensus factor that represents the overlap between informants' views of the target on the construct of interest (i.e., agreement); this factor captures covariation that is common across all informants' ratings on all indicators (CON in figure 1). The second type of factor is the unique perspective factor. There is one unique perspective factor for each informant (MP and FP in Figure 1). These factors capture covariance that is common across a single informant's set of indicators. The unique perspective factors represent a specific informant's idiosyncratic view of the target on the construct of interest, a view that is not shared by the other informant (i.e., disagreement). Finally, there are rating scale (i.e., indicator) specific factors (S1 through S4 in Figure 1). There is one of these factors for each scale. These factors capture the covariance in indicators that is unique to the specific indicator, but shared across informants. All of the latent factors described here are conceptualized as being orthogonal (i.e., uncorrelated).

Importantly, the factors in this model may be regressed onto external variables (Bauer et al., 2013; see Figure 1) to examine the predictors of informants' shared and unique views of the target (i.e., agreement and disagreement). When the unique perspective factors are regressed onto external variables (e.g., depressive symptomatology), results can be interpreted as the extent to which that particular external variable predicts disagreement via its relation to the informant's idiosyncratic impression of the target. When the consensus factor is regressed onto external variables, results can be interpreted as the extent to which that particular variable predicts informants' shared view of the target, or their agreement.

The goals of this study were accomplished by first estimating the unconditional trifactor model (i.e., the trifactor model without external predictor variables) for a major dimension of temperament, and then subsequently regressing the consensus and unique perspective factors

onto the parental characteristics of interest. Each higher-order dimension of temperament was examined in turn. Specific details regarding model specification are provided below. All models were estimated in Mplus version 7.4 (Muthen & Muthen, 1998-2012) using full information maximum likelihood techniques (FIML). This estimation procedure is recommended in the face of missing data (Allison, 2009; Graham & Coffman, 2012).

Results

Preliminary Analyses

Means and standard deviations for mother and father reported child temperament can be found in Table 1. Generally, children were rated higher on scales assessing positive affect (e.g., smiling and laughter, low intensity pleasure) than they were on scales measuring negative affect (e.g., sadness, fear) in terms of the average scores. Mean differences between mothers' and fathers' reports were generally small (most Cohen's *d*s between .1 and .2; see Table 1). The largest discrepancies were observed for the smiling and laughter (d = .50) and low intensity pleasure (d = .42) scales. Correlations between the mother and father reported temperament scales (see Table 1) ranged from .20 (sadness) to .62 (shyness). Most correlations were around .3 to .4 in size, consistent with prior work (e.g., Rothbart et al., 2001). As expected, correlations were often higher for scales focused on more overt behaviors (e.g., high intensity pleasure, shyness).

Means and standard deviations for mothers' and fathers' internalizing symptomatology and personality traits can be found in Table 2. The most highly endorsed type of symptomatology was anhedonic depression whereas anxious arousal was the least. Mothers and fathers scored similarly on the measures of internalizing symptomatology and personality (most Cohen's *d*s between .01 and .10; see Table 4). The largest observed difference was that mothers

reported more Constraint than fathers (d = .61). The correlations between mothers' and fathers' attributes ranged from .09 (Positive emotionality) to .39 (anxious arousal).

Effortful Control

The Effortful Control dimension comprises 4 CBQ scales: attentional focusing, inhibitory control, low intensity pleasure, and perceptual sensitivity (Clark et al., 2016; Rothbart et al., 2001)[1]. To estimate the unconditional trifactor model for Effortful Control, both mothers' and fathers' responses to the 4 Effortful Control scales were specified to load on the latent consensus factor. Next, mothers' responses to the 4 scales were specified to load on the mother perspective factor, and fathers' responses to the 4 scales were specified to load on the father perspective factor. Finally, scale factors were specified for each individual scale such that mothers' and fathers' responses to a given scale loaded on a single scale factor. At this stage, the variance of all latent factors was set to 1, and mean of all latent factors was set to 0. All covariances for the latent factors were fixed to 0.

Initially, all factor loadings and indicator intercepts in the unconditional model were allowed to freely estimate. A series of constraints on the factor loadings and indicator intercepts were then tested (via the significance of the change in χ^2) with the goal of obtaining the most parsimonious model possible[2]. It was possible to constrain mothers' and fathers' loadings on the consensus (e.g., maternal and paternal reported attentional focusing were set to equality) and scale factors, as well as the indicator intercepts, to equality without observing a significant drop in fit. All unique perspective factor loadings were able to be constrained across mothers and fathers except for inhibitory control. In this, the most justifiably constrained model, the father unique perspective factor variance and mean were allowed to freely vary. The final unconditional

[1] Preliminary exploratory factor analyses of the CBQ generally supported the approach to constructing dimensions used in the literature. Full results available upon request.
[2] Full results from this model fitting process (as well as for the other dimensions) are available upon request

trifactor model for Effortful Control fit the data at: χ^2 = 16.90, *df* = 17 *p* = .46; RMSEA = .00; SRMR = .07; CFI = 1.00; TLI = 1.00. The unstandardized and standardized parameter estimates for this model can be found in table 3.

The attentional focusing and inhibitory control scales loaded higher on the consensus factor than the unique perspective factors, whereas the low intensity pleasure and perceptual sensitivity scales loaded more strongly on the unique perspective factors. This suggests that parents' shared view of their child's Effortful Control is reflected more strongly in their ratings of attentional focusing and inhibitory control, whereas ratings of low intensity pleasure and perceptual sensitivity are more likely to reflect parents' idiosyncratic impressions of their child's Effortful Control. It is also worth noting that loadings on the scale factors were non-trivial.

Parental characteristics were introduced as predictors of the consensus and unique perspective factors one at a time. In these models the mother unique perspective factor was regressed on the mothers' attribute, and the father unique perspective factor was regressed on the fathers' attribute. The consensus factor was regressed on both the fathers' and mothers' attributes. This procedure is illustrated in Figure 1. In all, 7 conditional trifactor models were estimated, one for each parental characteristic.

Standardized regression coefficients and 95% confidence intervals can be found in table 6. Mothers' general distress, anxious arousal, and total distress were negatively associated with the consensus factor to a moderate degree (βs from -.21 to -.45). On the other hand, maternal Constraint and Positively Emotionality were positively associated with the consensus factor to a modest degree (βs were .22 and .23). Fathers' Positive Emotionality was also significantly related to the Consensus factor in this way (β = .26). Regarding the unique perspective factors, mothers' Negative Emotionality was negatively associated with the maternal unique perspective

factor (β = -.30), whereas mothers' Constraint was positively associated with the unique perspective factor (β = .39). The father unique perspective factor was significantly, negatively predicted by anhedonic depression (β = -.25), and significantly, positively predicted by Constraint (β = .25).

Importantly, despite differences across parents in the pattern of overall significance, the associations between parents' characteristics and the various factors generally did not differ significantly across parents (see Table 6). That is, it was possible to constrain most corresponding maternal and paternal paths (i.e., the paths from parent characteristics to unique perspective factors, and the paths from parent characteristics to the consensus factor) to the same values without observing a significant drop in model fit (full results available upon request). Only the paths from general distress and Constraint to the consensus factor significantly differed across mothers and fathers. In both instances, the maternal characteristic was more strongly associated with the consensus factor than was the corresponding paternal characteristic.

Gender differences across boys and girls were also examined by estimating the conditional trifactor model separately for boys and girls and imposing equality constraints on the paths from parental characteristics to the factors. There were few significant differences across girls and boys in how parent symptomatology and personality related to shared and unique parental views of Effortful Control. Positive Emotionality was more strongly related to fathers' unique perspectives of boys, and general distress was more strongly related to mothers' unique perspectives of boys (full results available upon request).

Negative Affectivity

The Negative Affectivity dimension includes 5 CBQ scales: sadness, anger/frustration, discomfort, fear, and soothability (Clark et al., 2016; Rothbart et al., 2001). The unconditional

trifactor model for Negative Affectivity was specified in the same general manner as described above for Effortful Control. The only major difference was that the loadings for one of the scale factors - anger/frustration - were set to 0 (effectively eliminating it). Mothers' and fathers' scales loaded only trivially on this factor, and allowing these loadings to freely estimate led to problems in estimation (specifically, issues of linear dependency between other scale factors). Factor loadings and intercepts were initially allowed to freely estimate, and constraints were systematically applied and tested as above to achieve the most parsimonious model. In the final model, factor loadings on the consensus factor, unique perspective factors, and scale factors were constrained to equality across mothers and fathers. Furthermore, all intercepts except for the soothability intercept were constrained to equality across parents. Every factor except for the father unique perspective factor was fixed to have a variance of 1 and mean of 0; the father unique perspective factor had a freely estimating mean and variance.

The unconditional trifactor model for Negative Affectivity fit the data at: $\chi^2 = 56.47$, $df = 33$, $p < .01$, $df = 28$; RMSEA = .06; SRMR = .06; CFI = .95; TLI = .93. Unstandardized and standardized parameter estimates for this model can be found in Table 4. The sadness, anger/frustration, and soothability scales loaded modestly to strongly on the consensus factor, indicating that parents' shared views of their children's Negative Affectivity are most related to their responses on these three scales. Conversely, the discomfort and fear scales effectively did not load on the consensus factor, suggesting that parents' joint impression of Negative Affectivity is unrelated to responses on these scales. With the exception of the anger/frustration scale, all scales loaded more strongly on the unique perspective factors than the consensus factor (anger/frustration still loaded moderately on these factors). Thus, mothers' and fathers' ratings on these five scales are more a reflection of parent specific impressions of Negative Affectivity

than shared impressions of Negative Affectivity. Notably, the fear and discomfort scales, which were the least related to the consensus factor, loaded moderately on the scale factors. This would appear to imply that although parents' shared overarching view of Negative Affectivity is unrelated to responses on these two scales, there is some scale specific consensus.

Standardized regression coefficients and 95% confidence intervals for the conditional trifactor model paths can be found in Table 6. Maternal Negative Emotionality significantly predicted the consensus factor to a moderate, positive degree (β = .25). General distress, Anhedonic depression, total distress, and Negative Emotionality were all significantly, positively related to both parents' unique perspective factors (βs between .18 and .37). Positive Emotionality was also significantly, negatively associated with fathers' unique perspective factor (β = -.19).

The strength of the associations between internalizing symptomatology, personality traits, and the three factors did not significantly differ across mothers and fathers. Similarly, the effects described here were not significantly different when comparing boys and girls as described above.

Surgency

The Surgency dimension is made up of 5 CBQ scales: impulsivity, high intensity pleasure, smiling and laughter, shyness, and positive anticipation (Clark et al., 2016; Rothbart et al., 2001). Specification of the unconditional trifactor model for Surgency was similar to the procedure described for the other two dimensions. As was the case with Negative Affectivity, trivial loadings on one scale factor (impulsivity) were fixed to 0. Furthermore, mothers' and fathers' ratings of shyness and smiling and laughter were specified to all load on the same scale factor rather than loading on distinct scale factors. These two scale factors were combined

because they were correlated ($r > .90$) to the point where it caused problems in estimation, however, unlike the impulsivity and anger/frustration factors, the individual scales did not load negligibly on their respective factors.

Factor loadings and intercepts were all freely estimated initially. Systematically applying and evaluating equality constraints across parents resulted in a final model in which factor loadings on the consensus factor, the unique perspective factors, and the scale factors, were equal across parents. Moreover, all intercepts except for smiling and laughter were equal across mothers and fathers. The final unconditional trifactor model for Surgency fit the data at: $\chi^2 = 74.99$, $df = 33$, $p < .01$, $df = 33$; RMSEA = .08; SRMR = .09; CFI = .94; TLI = .92. Unstandardized and standardized parameter estimates can be found in Table 5. The impulsivity, high intensity pleasure, and shyness scales all loaded moderately to strongly on the consensus factor. These scales are thus the best reflectors of parents' shared views of Surgency. The smiling and laughter, and positive anticipation, scales loaded negligibly on the consensus factor, suggesting that these scales largely fail to reflect parents' shared views of Surgency. All scales loaded moderately to strongly on the unique perspective factors, indicating that mothers and fathers hold coherent yet distinct views of their children's Surgency that are reflected in their ratings on each of the Surgency subscales. With the exception of the impulsivity scale, all scales loaded non-trivially on their scale specific factor.

Standardized regression coefficients and 95% confidence intervals for conditional trifactor model paths can be found in Table 6. Mothers' total distress and constraint were both significantly related to the consensus factor. Total distress was moderately ($\beta = .21$) associated with higher shared views of Surgency, and Constraint was moderately ($\beta = -.28$) associated with lower shared views of Surgency. On the other hand, maternal Positive Emotionality was

significantly, positively associated (β = .22) with the maternal unique perspective factor, and paternal anhedonic depression (β = -.19) and anxious arousal (β = -.18) were significantly, negatively associated with the father perspective factor.

The associations between the parental characteristics and the major factors did not significantly differ across mothers and fathers. Furthermore, there were no significant differences in the effects described here when comparing boys and girls.

Discussion

The current study evaluated how parents' internalizing symptomatology and personality traits are related to inter-parent agreement and disagreement when rating child temperament. All told, there was evidence that both maternal *and* paternal reports of child temperament were colored by their internalizing symptomatology and personality traits.

Summary

The conditional Effortful Control trifactor models revealed that anhedonic depression negatively predicted the father factor, and negative emotionality negatively predicted the mother factor. These findings indicate that anhedonic fathers, and dispositionally negative mothers, hold lower impressions of their child's Effortful Control, impressions that are unique from that of the other parent. Additionally, maternal distress, anxious arousal, and constraint, and parental positive emotionality, all significantly predicted the consensus factor.

The conditional trifactor models for Negative Affectivity suggested that mothers' unique views of their children's Negative Affectivity are related to distress, anhedonic depression, and Negative Emotionality. Fathers' unique views of their children's Negative Affectivity on the other hand were predicted by distress, anhedonic depression, and both Negative and Positive Emotionality. With the exception of the Positive Emotionality path, all effects were positive. This indicates that heightened levels of internalizing symptomatology and Negative Emotionality

correspond to idiosyncratically higher levels of perceived Negative Affectivity. There was also one significant pathway from a parental attribute to the consensus factor; specifically, maternal Negative Emotionality was positively related to parents' joint views of Negative Affectivity.

The conditional trifactor models for Surgency suggested mothers' unique views were positively associated with Positive Emotionality. This implies that the more positive mothers are in general, the more likely they are to uniquely report that their children are high in Surgency. Fathers' unique perspectives were negatively predicted by anhedonic depression and anxious arousal. Thus fathers who are more depressed and anxious are more likely to think their children are lower in Surgency compared to mothers. In addition to these paths, maternal distress and Constraint significantly predicted the consensus factor. Higher levels of maternal distress were associated with higher shared views of Surgency, whereas higher levels of Constraint were associated with lower shared views of Surgency. Notably, the path from maternal distress to the consensus factor appears non-intuitive, implying that mothers with more internalizing symptomatology (the other internalizing paths, though not significant, ran in the same direction) have children that are seen as more positive by both parents. This may partly be a result of impulsivity's inclusion in the Surgency dimension. If impulsivity is viewed as a negative trait (hinted at by the negative paths from internalizing symptomatology to the Effortful Control factors), then negative affect may increase ratings on that scale, thus increasing scores on the Surgency dimension as a whole. Follow-up analyses supported this notion. When impulsivity was removed from the Surgency model the path from maternal distress to the consensus factor remained significant, but reversed in sign (β = -.36; 95% CI: -.63, -.10), implying that heightened distress was associated with a decreased shared view of child Surgency.

Overall, mothers' and fathers' unique perspectives were associated with both internalizing symptomology and personality traits. In other words, disagreement between parents regarding where their children fall on some temperamental trait is partially attributable to the psychological characteristics of each of the parents. Importantly, although the pattern of significant paths differed in some cases for mothers' and fathers', the paths from psychological attributes to the unique perspective factors were consistent for mothers and fathers. This implies that for the most part, mothers' and fathers' reports may not be differentially affected by the psychological characteristics examined here. In other words, the intrapsychic processes the bias maternal reports appear to operate in a similar fashion for paternal reports.

In addition to these associations with the unique perspective factors, there were several significant pathways pointing to an association between parental attributes and the consensus factor, most notably for the dimension of Effortful Control. Although most of these paths did not significantly differ across mothers and fathers, some did, suggesting that the attributes of a single parent can influence how *both* parents perceive and report on their child. These paths could represent parent-offspring transmission effects, either through environmental or genetic pathways. For example, genetically informed research suggests that maternal internalizing symptomatology can act as a purely environmental risk for unconstrained behavior (e.g., Kim-Cohen, Moffitt, Taylor, Pawlby, & Caspi, 2005; Leve et al., 2010). And given that paths from mothers' and fathers' attributes rarely differed significantly, these could represent the effects of shared genetic makeup between parents and offspring. On the other hand, parents may influence how the other parent perceives the child on their basis of their personality or symptomatology. It could be the case that one parent is relying on the other for information about their child's temperament. If the "informant" parent has a distorted view of the child as a result of

internalizing symptomatology or personality, then such perceptions might also influence how that other parent views the child. Given that mothers traditionally spend more time with young children (e.g., Barnett & Baruch, 1987), this could account for why most attributes that significantly predicted the consensus factor were the mothers', and why the maternal effects were larger than the paternal effects, in the case of any differences. Of course, these possible explanations need not be mutually exclusive.

Implications

The current findings have implications for the measurement of child temperament and behavior. Specifically, results suggest that parents' disagreement on temperament questionnaires partly reflect some of their own psychological characteristics. This implies that parents' reports of their children's temperament may be colored by a wide array of their own symptoms and traits. In other words, parental reports capture some information about the parental informant in addition to information about the child. The effects were not especially large in size, but considering that the aim of parent report questionnaires is to collect information about the child, such biases might prove important. Broadly speaking, these findings are consistent with past studies. For instance, there has been evidence that depressed mothers may exaggerate the presence of problematic child behavior (e.g. Fergusson et al., 1993). The findings here extend this notion and illustrate that several psychological attributes can potentially "distort" parental reports of temperament. Likewise, the current report suggests that reports by fathers may also suffer from these biases.

Practically speaking, this study should inspire investigators to think about parent reports in a more strategic manner, and to collect more information about the psychological characteristics of the parents. The current findings highlight the need to collect data from

multiple sources/methods, as any one source will provide data that may conflate child temperament with a number of irrelevant personal factors. The present pattern of findings especially emphasize that care is needed in soliciting parental reports when there are likely to be elevated levels of parental internalizing symptomatology in a sample. For example, researchers interested in studying the influence of parental internalizing psychopathology on child development would do well to rely on methods of child assessment beyond parent report. Even when there is no a priori reason to expect widespread pathology in a sample, it would be beneficial to include brief assessments of internalizing symptomatology and parent personality along with assessments of child temperament.

Limitations and Future Directions

There are several limitations to the present study that are worth acknowledging. First and foremost is the issue of generalizability. The current findings are based on a single measure of parent reported temperament. However, the CBQ is widely used and similar in structure and content to other parent report scales. Most parent report scales, no matter the overarching construct of interest, usually operate by asking parents to report on specific child behaviors. Second, the vast majority of participants were European American and the target ages of the children were young. Future investigations should test the extent to which child age and family ethnicity moderate the findings reported here. Also, parent symptomatology and personality was assessed via self-report. Self-reports provide meaningful information, but it would be helpful to know if and how the effects reported here change as a function of the way parent characteristics are measured. For example, it might be the case that certain effects are stronger when parental symptomatology is assessed via clinical interview.

Future work, in addition to generalizing the present findings as recommended above, should attempt to evaluate the processes underlying the effects reported here. For example, scale (as opposed to dimension) level analyses could shed light on what particular items are more likely to be influenced by parental attributes. This could reveal specific child behaviors that mothers and fathers are especially unlikely to agree with each other over, and some the factors that contribute to this disagreement. A more fine grained analysis of the role of personality is also warranted. In the current study, personality was kept at the level of superordinate dimensions. To better understand how parent personality influences ratings of child behavior it is worth examining personality at the facet level. This provides a more detailed view of the relationship between parent personality and parent perceptions of child temperament.

Subsequent research could also attempt to extend the findings reported here to other common informants of child temperament. For example, teachers and clinicians often provide reports of child behavior. It is just as useful to know about how their attributes affect reports of child behavior as it is to know about parents. Indeed, it could even be worth assessing the extent to which behavioral coders (of laboratory assessments and home observations) are influenced by certain characteristics. Informants such as teachers and clinicians have a wealth of experience regarding child development to draw on when filling out temperament questionnaires, and behavioral coders frequently base their ratings on clearly defined coding schemes and observed behaviors. Despite this, it may be misguided to simply assume that all their ratings are immune from the potentially distorting effects of certain personality traits and pathologies.

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APPENDICES

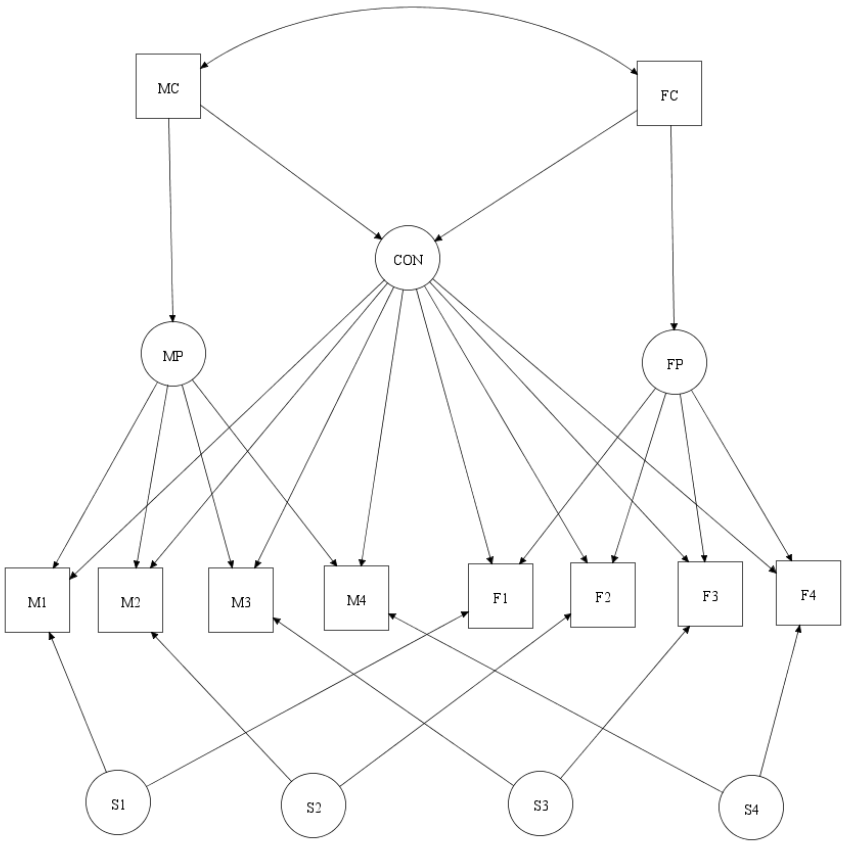

Figure 1. *The Trifactor Model*. M1 - M4 = mothers' scale ratings; F1 - F4 = fathers' scale ratings; CON = consensus factor; MP = maternal unique perspective factor; FP = paternal unique perspective factor; S1 - S4 = scale specific factor; MC = maternal characteristic; FC = paternal characteristic.

Table 1
CBQ Means, Standard Deviations, and Mother-Father Scale Correlations

	Mothers		Fathers			
	Mean	SD	Mean	SD	*d*	*r*
Activity Level	5.21	.62	5.18	.66	.04	.36
Smiling and Laughter	5.89	.50	5.55	.59	.50	.23
High Intensity Pleasure	5.13	.71	5.08	.73	.07	.53
Approach	5.27	.57	5.07	.56	.28	.22
Soothability	4.84	.68	4.70	.66	.18	.35
Impulsivity	4.81	.61	4.72	.60	.14	.41
Anger/Frustration	4.62	.70	4.62	.67	0	.37
Fear	3.74	.88	3.65	.77	.10	.37
Discomfort	4.11	.73	4.04	.64	.08	.27
Sadness	3.84	.58	3.85	.61	.01	.20
Shyness	3.33	1.15	3.39	.96	.06	.62
Attentional Focusing	4.40	.73	4.29	.66	.16	.51
Inhibitory Control	4.23	.72	4.20	.62	.05	.49
Low Intensity Pleasure	5.53	.62	5.22	.59	.42	.25
Perceptual Sensitivity	4.83	.78	4.67	.71	.18	.31

Note. SD = Standard deviation; *d* = Cohen's *d* for mean difference; *r* = correlation between mother and father scales

Table 2

Parent Internalizing Symptomatology and Personality Means, Standard Deviations, and Mother-Father Correlations

	Mothers		Fathers			
	Mean	SD	Mean	SD	*d*	*r*
General Distress	1.56	.52	1.55	.57	.01	.23
Anhedonic Depression	2.49	.61	2.45	.62	.05	.18
Anxious Arousal	1.12	.26	1.13	.33	.03	.39
Total Depression	2.02	.46	2.00	.48	.03	.28
Depression and Anxious Arousal	1.72	.35	1.71	.39	.02	.32
Negative Emotionality	.24	.14	.25	.17	.05	.19
Constraint	.76	.14	.65	.14	.61	.17
Positive Emotionality	.64	.14	.66	.17	.10	.09

Note. SD = Standard deviation; *d* = Cohen's *d* for mean difference; *r* = correlation between mother and father scales

Table 3
Unconditional Trifactor Model for Effortful Control

	Consensus Factor		Unique Factor		Scale Factor		Scale Intercepts	
Scale	λ	STD	λ	STD	λ	STD	ν	STD
Attentional Focusing								
Mother	.39	.55	.23	.33	.32	.46	4.43	6.26
Father	.39	.58	.23	.38	.32	.48	4.43	6.56
Inhibitory Control								
Mother	.39	.55	.31	.44	.25	.35	4.25	5.95
Father	.39	.64	.08	.14	.25	.40	4.25	6.87
Low Intensity Pleasure								
Mother	.19	.31	.41	.65	.23	.37	5.52	8.89
Father	.19	.32	.41	.76	.23	.39	5.52	9.25
Perceptual Sensitivity								
Mother	.28	.37	.28	.36	.33	.43	4.85	6.35
Father	.28	.38	.28	.42	.33	.45	4.85	6.60

Note. Unique Factor = unique perspective factor; λ = un - standardized factor loading; ν = unstandardized intercepts; STD = standardized parameter estimates. N = 222. df = 17. Father unique perspective factor mean and variance freely varied, all other factor means and variances set to 0 and 1, respectively. Fit information: χ^2 = 16.90, p = .46; RMSEA = .00; SRMR = .07; CFI = 1.00; TLI = 1.00.

Table 4

Unconditional Trifactor Model for Negative Affectivity

	Consensus Factor		Unique Factor		Scale Factor		Scale Intercepts	
Scale	λ	STD	λ	STD	λ	STD	ν	STD
Sadness								
Mother	.13	.23	.42	.73	.12	.21	3.85	6.63
Father	.13	.22	.42	.63	.12	.20	3.85	6.33
Anger								
Mother	.41	.59	.32	.46	.00	.00	4.63	6.65
Father	.41	.61	.32	.43	.00	.00	4.63	6.84
Discomfort								
Mother	-.10	-.14	.50	.68	.25	.34	4.09	5.55
Father	-.10	-.16	.50	.70	.25	.39	4.09	6.44
Fear								
Mother	-.01	-.01	.47	.55	.45	.53	3.72	4.36
Father	-.01	-.01	.47	.53	.45	.57	3.72	4.72
Soothability								
Mother	.27	.40	.30	.45	.29	.43	3.16	4.68
Father	.27	.41	.30	.41	.29	.44	3.33	5.03

Note. Unique Factor = unique perspective factor; λ = un - standardized factor loading; ν = unstandardized intercepts; STD = standardized parameter estimates. N = 222. df = 33. Father unique perspective factor mean and variance freely varied, all other factor means and variances set to 0 and 1, respectively. Fit information: χ^2 = 56.47, p = .01; RMSEA = .06; SRMR = .06; CFI = .95; TLI = .93.

Table 5
Unconditional Trifactor Model for Surgency

	Consensus Factor		Unique Factor		Scale Factor		Scale Intercepts	
Scale	λ	STD	λ	STD	λ	STD	ν	STD
Impulsivity								
Mother	.37	.62	.31	.51	.00	.00	4.82	7.98
Father	.37	.61	.31	.65	.00	.00	4.82	7.95
High Intensity Pleasure								
Mother	.27	.38	.30	.43	.43	.61	5.16	7.29
Father	.27	.36	.30	.53	.43	.59	5.16	7.07
Smiling and Laughter								
Mother	-.10	-.20	.34	.67	.16	.31	5.89	11.53
Father	-.10	-.17	.34	.75	.16	.27	5.69	9.76
Shyness								
Mother	.60	.53	.24	.22	.57	.51	4.69	4.19
Father	.60	.61	.24	.31	.57	.58	4.69	4.77
Positive Anticipation								
Mother	.02	.04	.33	.59	.21	.37	5.23	9.37
Father	.02	.04	.33	.73	.21	.36	5.23	9.11

Note. Unique Factor = unique perspective factor; λ = un - standardized factor loading; ν = unstandardized intercepts; STD = standardized parameter estimates. Smiling and laughter and shyness scales loaded on the same scale factor. $N = 222$. $df = 33$. Father unique perspective factor mean and variance freely varied, all other factor means and variances set to 0 and 1, respectively. Fit information: $\chi^2 = 74.99$, $p < .01$; RMSEA = .08; SRMR = .09; CFI = .94; TLI = .92.

Table 6

Paths From Parent Characteristics to Consensus and Unique Perspective Factors

Dimension/Factor	General Distress	Anhedonic Depression	Anxious Arousal	Total Distress	Negative Emotionality	Constraint	Positive Emotionality
Effortful Control							
Consensus - Mother	**-.45[1]**	-.15[1]	**-.21[1]**	**-.39[1]**	-.13[1]	**.22[1]**	**.23[1]**
	[-.62, -.29]	[-.35, .05]	**[-.42, -.01]**	**[-.57, -.21]**	[-.33, .07]	**[.03, .42]**	**[.03, .43]**
Consensus - Father	-.18[2]	-.13[1]	-.09[1]	-.14[1]	-.14[1]	-.15[2]	**.26[1]**
	[-.37, .01]	[-.35, .08]	[-.31, .13]	[-.35, .06]	[-.35, .06]	[-.35, .06]	**[.07, .46]**
Mother Perspective	-.10[3]	-.08[3]	-.04[3]	-.07[3]	**-.30[3]**	**.39[3]**	-.01[2]
	[-.24, .05]	[-.23, .07]	[-.15, .07]	[-.20, .06]	**[-.48, -.11]**	**[.18, .59]**	[-.12, .09]
Father Perspective	.04[3]	**-.25[3]**	-.04[3]	-.14[3]	-.10[3]	**.25[3]**	.16[2]
	[-.19, .26]	**[-.44, -.06]**	[-.24, .16]	[-.35, .07]	[-.31, .11]	**[.02, .47]**	[-.05, .37]
Negative Affectivity							
Consensus - Mother	.18[1]	.13[1]	.05[1]	.18[1]	**.25[1]**	-.16[1]	.01[1]
	[-.02, .38]	[-.06, .32]	[-.17, .26]	[-.03, .38]	**[.08, .42]**	[-.34, .02]	[-.17, .19]
Consensus - Father	.10[1]	.08[1]	.13[1]	.10[1]	.13[1]	-.03[1]	-.07[1]
	[-.11, .30]	[-.14, .29]	[-.08, .35]	[-.11, .31]	[-.06, .32]	[-.22, .17]	[-.26, .13]
Mother Perspective	**.32[3]**	**.18[3]**	.06[3]	**.29[3]**	**.26[3]**	.08[3]	-.15[3]
	[.16, .48]	**[.01, .34]**	[-.12, .23]	**[.13, .45]**	**[.10, .41]**	[-.09, .25]	[-.31, .01]
Father Perspective	**.25[3]**	**.37[3]**	.14[3]	**.37[3]**	**.28[3]**	-.02[3]	**-.19[3]**
	[.07, .42]	**[.10, .53]**	[-.04, .31]	**[.21, .53]**	**[.11, .44]**	[-.21, .16]	**[-.36, -.01]**
Surgency							
Consensus - Mother	.16[1]	.13[1]	.15[1]	**.21[1]**	.11[1]	**-.28[1]**	.10[1]
	[-.01, .34]	[-.04, .30]	[-.03, .33]	**[.04, .38]**	[-.29, .05]	**[-.43, -.12]**	[-.06, .27]
Consensus - Father	-.01[1]	.02[1]	.07[1]	.01[1]	.15[1]	-.07[1]	-.13[1]
	[-.18, .17]	[-.16, .19]	[-.11, .25]	[-.17, .19]	[-.02, .32]	[-.23, .10]	[-.30, .04]
Mother Perspective	-.14[3]	-.05[3]	-.11[3]	-.13[3]	-.12[3]	.13[3]	**.22[3]**
	[-.32, .04]	[-.22, .13]	[-.29, .06]	[-.31, .05]	[-.29, .05]	[-.04, .31]	**[.05, .38]**
Father Perspective	-.01[3]	**-.19[3]**	**-.18[3]**	-.17[3]	-.07[3]	.02[3]	.17[3]
	[-.19, .16]	**[-.36, -.03]**	**[-.35, -.02]**	[-.34, .00]	[-.24, .11]	[-.17, .20]	[-.01, .35]

Note. Consensus - Mother = path from maternal characteristic to consensus factor; Consensus - Father = path from paternal

Table 6 (cont'd)

characteristic to consensus factor; Mother Perspective = path from maternal characteristic to maternal unique perspective factor; Father Perspective = path from paternal characteristic to paternal unique perspective factor. Standardized regression coefficients presented. 95% confidence intervals appear in brackets underneath estimate. Bolded estimates' 95% CIs do not include zero. Corresponding parental effects tested for equality; corresponding paths that share superscripts equal, corresponding paths that do not share superscripts significantly different.