



Parents' Spontaneous Attributions about their Problem Child: Associations with Parental Mental Health and Child Conduct Problems

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Abstract

Parents' attributions about their child's personality and behaviour are known to predict the quality of parent-child interactions and outcomes for the child, including those from parenting interventions. Nothing is known, however, about the quantity and quality of attributions parents use during free speech about their children referred for treatment of behavioural and emotional problems. We tested hypotheses about the types of attributions and associations among parental attributions, parental psychopathology and child conduct problems, using 504 five-minute speech samples (FMSS) coded using the Parent Attribution Speech Sample (PASS) coding system. Both mothers and fathers talked about their thoughts and feelings regarding their children with disruptive behaviour problems ($N = 295$; 74% male; 3–8 years old). The assessment of spontaneous parental attributions via the PASS coding system was shown to be valid and reliable. Mothers made more negative, dispositional attributions than fathers, however, parents of either gender made, on average, more positive than negative attributions about their children. Parents' natural attributions about these children with emotional and behavioural problems were rather independent from parents' own mental health, but were consistently related to child factors. Specifically, across parent gender and across all attribution dimensions, levels of callous-unemotional traits were associated with spontaneous parental attributions above and beyond other child and parent factors. Overall, the results show that parents' spontaneous speech about referred children contains important information about their causal attributions, and that these are associated with child temperament rather than specific referral symptoms.

Keywords Parental attributions · Parent attribution measure · Conduct problems · Callous-unemotional traits

Conduct problems (CPs) are a common reason for child referrals to mental health services (Rushton et al. 2002) and are associated with a developmental trajectory of negative social and mental health problems, aggression, and antisocial behaviour in adolescence and adulthood (Frick and White 2008; Moffitt et al. 1996). A significant evidence base demonstrates that childhood CPs can be successfully treated via behavioural parent training (Kaminski and Claussen 2017). Of the variables known to reliably predict treatment success, one of the most robust is parents' attitude and cognitions. Parental attributions in particular are considered to have wide reaching influence on treatment motivation (Mah and Johnston 2008), engagement (Miller and Prinz 2003; Morrissey-Kane and

Prinz 1999), and overall effectiveness (Mattek et al. 2016). Thus, best possible parent training interventions will possibly require methods for assessing, monitoring, and addressing parental attributions in treatment (Sawrikar and Dadds 2018). The current study aims to understand the natural landscape of parental attributions in parent training by examining spontaneous parental attributions as parents speak about their child at the time of clinic referral.

Parental attributions refer to the implicit or explicit inferences and beliefs parents hold about the causes of their own as well as their child's behaviour (Joiner and Wagner 1996). Attributions are recognised to possess different dimensions of causality, originally referred to as locus, stability, and control (Weiner 1980, 2010). Negative, stable, and internal attributions about child misbehaviour are considered to be problematic in behavioural parent training because parents with such attributions are known to be less accepting of parent training (Reimers et al. 1995), which could contribute to the ineffective implementation of treatment recommendations and/or cause parents to drop out entirely (Miller and Prinz 2003; Scott and Dadds

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2009). Recently, Sawrikar and colleagues (Sawrikar and Dadds 2018; Sawrikar et al. 2018a, b) showed that parental attributions about their child's personality and behaviour problems are unique predictors of treatment outcomes for those receiving parenting interventions for child conduct problems.

A range of assessment tools for parental attributions regarding child behaviour have been developed over the years including video interpretation, semi-structured interviews, and questionnaires (Bugental et al. 1998). Most use forced-choice assessment structures and are based on a priori selected attribution items representing the dimensions of permanence, control, and internality (Pidgeon and Sanders 2002; Walker 1985). A small body of research has evaluated the psychometric properties of these dimensions (Sawrikar et al. 2018a; Snarr et al. 2009). For example, the Parent Attribution Measure (PAM; Sawrikar et al. 2018a) was developed to measure parental attributions along dimensions of Permanence, Intentionality, and Disposition that included items about the child's likeability and valence (good versus bad child). The assessment of dispositional dimensions was considered important given recent work showing that child temperamental characteristics, assessed in the form of callous-unemotional (CU) traits, are a robust and reliable predictor of child outcomes both naturally and in response to interventions (Frick et al. 2014; Frick and White 2008; Hawes et al. 2014). The model with Permanence, Intentionality, and Disposition dimensions as first-order factors grouped under a higher-order general factor provided a close fitting model and demonstrated sound psychometric properties (Sawrikar et al. 2018a).

Despite these developments, it is unknown to what extent parents actually use the types of attributions specified in psychological measures, in their natural free speech and cognition. To map the natural landscape of parental attributions at a critical time in parent-child relationships, that is referral to a child mental health intervention, should be fundamental to a better understanding of how best to work with parental attitudes and cognitions throughout treatment. Psychological measures alone may not be appropriate for allowing parents to express their concerns about their child in the early stages of treatment when establishing a supporting therapeutic relationship is important for enacting parenting change (Piotrowska et al. 2017). Psychological measures also increase the burden on parents which may hinder their willingness to participate in treatment. To address this, the current study aimed to assess spontaneous parental attributions as parents speak about their child at the time of clinic referral. Using a newly developed Parent Attribution Speech Sample Coding Manual (PASS coding manual; Schollar-Root et al. 2017), the current study assesses the number and types of attributions mothers and fathers verbally make during a free speech task. The PASS coding manual was developed based on the

PAM's factor structure and designed to assess positive and negative parental attributions verbalised in speech without cues to parents to explain their child's behaviour.

The current study also examined the relationships between verbally coded parental attributions and dimensions of child mental health and parental psychopathology. The aim was to examine individual variation in verbally coded parental attributions and factors commonly associated with parental attributions. For instance, parents' mental health, especially depression, is known to influence causal explanation for child behaviours when parental attributions are assessed using self-report (Leung and Slep 2006). However, whether this is replicable in free speech is an important question as objective measures are known to be less susceptible to depressogenic influences (Burt et al. 2005). Likewise, while self-report measures of negative parental attributions are highly associated with child behavioural and emotional problems (e.g., Bugental et al. 1998), nothing is known about how the child's diagnostic profile is associated with verbal parental attributions assessed in free speech. Thus, we investigated the association between verbally coded parental attributions with child behavioural and emotional problems measured diagnostically along dimensions of conduct problems (Oppositional-Defiant or Conduct Disorder), emotional problems (Anxiety/Depression), Attention Deficit and Hyperactivity Disorder (ADHD), and Autism Spectrum Disorder (ASD). It should be noted that the current study consisted of a sample of children primarily referred for the treatment of conduct problems. In this context, we were interested in assessing for the influence of child CU traits due to their potential to shape parents' dispositional attributions (Sawrikar et al. 2018a).

To meet the aims of the current study and examine naturally occurring parental attributions in free speech, the first objective was to examine the feasibility of the newly developed PASS coding manual considering this was the first study to examine spontaneous parental attributions. This was done by assessing its convergent validity with the PAM as well as its inter-rater reliability. Further, this is one of the first studies to assess attributions in both mothers and fathers regarding both sons and daughters with disruptive behaviour problems in a large sample of children. Previous research has shown interparental differences in measuring parental attributions across mothers and fathers (Hoza et al. 2000; Sawrikar et al. 2018a; Snarr et al. 2009); thus, it was hypothesised that while parents of either gender will make parental attributions during free speech, they will differ in the number and types of parental attributions. Finally, it was hypothesised that the parental attributions assessed along first-order dimensions of Permanence, Intentionality, and Disposition, and a higher-order Total Negative Attribution Style scale will be

significantly associated with parental psychopathology, child behavioural and emotional problems, and child CU traits.

Method

Participants

Participants were parents of children with behavioural and emotional problems referred to the Child Behaviour Research Clinic in Sydney, Australia. Inclusion criteria were child age 3–8 years, referral for externalising behaviour problems, and a primary or secondary diagnosis of Oppositional Defiant Disorder (ODD) or Conduct Disorder (CD) based on the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV; American Psychiatric Association 2000). Exclusion criteria were any major neurological and/or physical illness, Intelligence Quotient <70, concurrent treatment by other mental health services, or legal cases involving the child. For this specific analysis adoptive, foster, or step-parents as well as grandparents as primary care takers were excluded. This amounted to a sample size of $N=295$ children (73.6% male) with a mean age of 5.6 years ($SD=1.67$). The majority (69.8%) met criteria for a primary diagnosis of either ODD or CD, followed by 18.6% of children with an ADHD diagnosis, and finally 3.4% with an ASD diagnosis and 3.4% who fulfilled criteria for an Anxiety or Depressive Disorder. Comorbidity was common with 58.3% meeting criteria for two or more DSM diagnoses.

A total of 504 speech samples were collected across 295 child participants during pretreatment assessment; 56% were mothers, $M_{age}=38.47$, $SD=5.46$, fathers, $M_{age}=40.60$, $SD=5.90$. The majority of parents were married (69.8%), while 9.8% were living in a de-facto relationship, 10.8% of parents were separated and 7.8% were divorced. Majority of parents had completed tertiary education (mothers: 84.4%; fathers: 71.8%) and the remaining had completed secondary education (mothers: 14.6%; fathers: 24.4%). One father (0.3%) completed primary school education only. Families were identified as having either Anglo-European Caucasian or European background (75.9%), Asian/Indian (4.8%), Middle Eastern/Northern African (1.4%), and mixed ethnic backgrounds (17.3%). The most common mixed background was Anglo-European Caucasian and Middle Eastern/Northern (6.8%).

Procedures

Research was approved by the University of New South Wales Human Research Ethics Committees. Data were collected between 2008 and 2015. Parents were audiotaped during the Five Minute Speech Sample (FMSS) as part of pretreatment assessment which included a standardised battery of

questionnaires, semi-structured interviews, parent-child interaction, and computerised tasks. Informed consent was obtained from all individual participants included in the study.

Measures

Parental Mental Health The Brief Symptom Inventory (BSI) is a 53-item, short version of the Symptom Checklist (SCL-90-R) with nine symptom dimensions of Somatisation, Obsessive-Compulsivity, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism (Boulet and Boss 1991). In addition, it composes three global scales: the General Severity Index (GSI), the Positive Symptom Index and the Positive Symptom Distress Index. The GSI is the mean of all items and the most sensitive indicator of respondents' distress (Derogatis and Melisaratos 1983) and thus was used as the index in this study. The internal consistency for the GSI scale in the current sample was excellent ($\alpha_{mother}=0.96$; $\alpha_{father}=0.95$).

Child Mental Health The Diagnostic Interview Schedule for Children, Adolescents and Parents, 4th edition (DISCAP-IV; Holland and Dadds 1997) was used to make DSM-IV diagnoses along the dimensions of conduct problems (ODD/CD), anxiety/depression, ADHD, and ASD. The DISCAP is a semi-structured interview schedule for diagnosing common childhood behavioural and affective disorders. Severity ratings along a 6-point scale ranging from 1 (minimal impairment in functioning/symptoms rarely problematic) to 6 (very severe impairment in functioning/symptoms always problematic) are assigned with a severity rating of 4 representing the cut-off for symptoms being clinically significant to warrant a diagnosis. Interviews were conducted by clinical psychologists using the DISCAP as a diagnostic tool. Inter-diagnostician agreement for children referred to the Child Behaviour Research Clinic was checked for $N=123$ cases using two methods: agreement on type of diagnosis was estimated using kappa calculated for diagnostic category for primary, secondary, and tertiary diagnoses; kappa agreement levels were primary = 0.73, secondary = 0.71 and tertiary = 0.57. Agreement of severity levels for each of the primary diagnostic categories were calculated using bivariate correlations between diagnosticians rating on a 0 to 6 scale. Correlations were: Conduct Problems = 0.74, ADHD = 0.81, Anxiety-depression = 0.48, and ASD = 0.80.

CU traits were assessed via the validated University New South Wales (UNSW) method (Dadds et al. 2005) which combines items from both the Strengths and Difficulties Questionnaire (SDQ; Goodman 1997) and Antisocial Process Screening Device (APSD; Frick and Hare 2001). A UNSW CU trait factor is derived from aggregating three of the original APSD CU scale items ('Unconcerned regarding

others feelings', 'No guilt', 'Breaks promises') plus five (reversed) items from the prosocial behaviour scale of the SDQ ('Inconsiderate of others feelings', 'Does not share with other children', 'Unhelpful if someone is hurt, upset, or ill', 'Not kind to younger children', 'Does not volunteer to help others'). The UNSW CU trait factor is known to have unique predictive utility in the development of antisocial behaviour (Dadds et al. 2005). The internal consistency for the CU trait factor in the current sample was good to excellent ($\alpha_{\text{mother}} = 0.81$; $\alpha_{\text{father}} = 0.76$).

Parent Attribution Measure (PAM) The PAM is a 12-item self-report questionnaire that measures causal explanations for child misbehaviour along dimensions of Permanence, Intentionality, and Disposition as well as a higher-order Total Negative Attribution Style dimension (Sawrikar et al. 2018a). Intentionality items assess parents' perceptions that the cause of the problem behaviour is under the child's control (e.g., "My child 'pushes my buttons' on purpose"), Permanence items assess parents' perceptions that the cause of the problem behaviour will change or remain the same (e.g., "My child will always be a problem"), and Disposition items assess the extent parents infer the cause of the problem behaviour is dispositional (e.g., "I worry that my child is a bad person"). Respondents indicate their agreement to attribution statements on a 3-point Likert scale ranging from 1 (not at all true) to 3 (certainly true). Each dimension is sampled with positively and negatively valenced items. Reverse scores are used for positively worded items leading to a representation of negative parental attributions. Each attribution dimension showed internal consistency in the range from 0.64 to 0.82 (Sawrikar et al. 2018a).

Five-Minute Speech Sample (FMSS) The FMSS was originally developed to measure expressed emotions in caregivers of mentally ill patients (e.g., Malla et al. 1991) but has more recently been used to assess parent-child relationships (Pasalich et al. 2011). During the initial assessment, each parent sat alone in privacy at a desk in a quiet room and was asked to speak freely for five minutes about their '*child as a person, their thoughts and feelings about him/her, as well as their relationship they have with their child*'.

Parental Attributions Speech Sample (PASS) Coding Manual The PASS coding manual was based on the original four dimensions measured by the PAM; Permanence, Intentionality, Likability, and Badness/Goodness. Sawrikar et al. (2018a) later showed via confirmatory factor analysis that the two dimensions of Likability and Badness/Goodness was best consolidated into one Disposition dimension. This three-factor/dimension structure yielded better internal consistency, convergent validity as well as temporal stability (Sawrikar et al. 2018a). Furthermore, there was strong evidence for the

use of a higher-order Total Negative Attribution Style scale which sums responses across the dimensions. Thus, while the PASS coding manual originally specified Likeability and Badness/Goodness attributions to be coded individually, these were consolidated into one Disposition dimension for the specific regression analysis reported in this study. All dimensions were coded using positively and negatively worded valences, e.g., Permanent versus Changeable.

Coding Procedure The 504 FMSS were transcribed by independent researchers. Coding of the transcripts was then conducted by author 1 and one assistant (rater 2; undergraduate psychology student) who received extensive coding training. Both coders were blind to the child and family's status on any of the other measures. The order of coding transcripts was randomised and the qualitative data analysis software Nvivo11 (2012) was used to enter and collate coded data. For inter-rater reliability purposes a first pilot analysis was conducted with the first 24 transcribed and fully coded speech samples. Next, 25% of the sample was re-coded by the second rater and inter-rater reliability was assessed and reported below. The Total Attribution Style dimension was manually counted by adding frequency counts for the sub-scales of Permanent, Deliberate, Unlikeable and Bad (Total Negative) as well as Changeable, Unintentional, Likeable and Good (Total Positive). Thus, this study's key dependent variables are the frequency of parental attributions along each attribution sub-scale and total attribution style dimension.

Analytic Strategy

First, inter-rater reliability analysis was conducted using intraclass correlations between rater 1 (coded 100% of sample) and rater 2 (coded 25% of sample). Second, convergence between FMSS coded and self-reported attributions was calculated for a subsample of parents who had completed both the FMSS and the PAM ($n = 50$). Third, total amount, means, and standard deviations for each coded attribution sub-scale were examined and the hypothesis that there would be a significant gender difference among parents was tested using repeated measures MANOVA in SPSS Version 22 (IBM Corp. 2013). MANOVA was employed to investigate potential interaction effects among attribution type, valence (positively worded versus negatively worded sub-scales), and parent gender; however, these analyses were limited to families where the FMSS was collected from both mothers and fathers ($n = 209$). Families included in the MANOVA analyses had younger children, $F(1,293) = 9.91, p = 0.002$, higher levels of mother education, $F(1,290) = 6.29, p = 0.013$, higher levels of father education, $F(1,283) = 21.32, p = 0.000$, and lower rating of ADHD severity, $F(1,283) = 5.90, p = 0.016$, than those excluded from the analysis. Families were similar on mothers age, $F(1,203) = 1.01, p = 0.317$, fathers age, $F(1,175) = 1.10,$

$p = 0.295$, rating of CP severity, $F(1,286) = 0.31$, $p = 0.577$, ratings of Anxiety/Depression severity, $F(1,285) = 0.81$, $p = 0.369$, and ratings of ASD severity, $F(1,286) = 0.587$, $p = 0.444$.

Finally, hierarchical step-wise regression analyses were conducted to evaluate which parent and child factors were associated with the type and frequency of parental attributions. This approach ensured that only meaningful variables were entered so to not over-specify the model. Variables were entered in four blocks: (i) covariates' child age, child gender, parent education, and parent age, (ii) parental mental health measured via parents' BSI-GSI scores, (iii) four child symptom dimensions of CPs, anxiety/depression, ADHD, and ASD, and (iv) and CU traits measured by scores on respective parents' UNSW CU Trait factor.

Results

During the FMSS, mothers spoke on average for 4.61 minutes ($SD = 0.90$) and uttered 581 words ($SD = 172.60$); fathers' mean FMSS length was 4.45 minutes ($SD = 1.16$) and uttered 555 words ($SD = 205.09$). Mothers' output was higher for both duration, $t(208) = 2.07$, $p = 0.039$, and number of words, $t(208) = 2.43$, $p = 0.016$.

Do Parents Naturally Make Parental Attribution Statements?

84.5% of mothers expressed at least one positive attribution during their FMSS and 48.6% stated at least one negative attribution. A similar percentage of fathers made at least one positive attribution (86.4%) whereas fathers were less likely to state at least one negative attribution (34.5%). Only 6.3% of mothers and 9.0% of fathers expressed no attributions at all and 93.6% of mothers and 91.1% of fathers made at least one attribution during the five-minute free speech period. On average, parents made 3 attributions per speech sample with substantial variation among parents (mothers: 3.27, $SD = 2.93$; fathers: 2.92, $SD = 2.71$). Table 1 displays the total number of attributions made by parents during the FMSS as well as means and standard deviations of mothers' and fathers' attributions among the four coded attribution dimensions (and the collapsed Disposition dimension with its sub-scales). The most attributions were coded for the Positive Disposition sub-scale (includes Good and Likeable attributions), while the least amount of attributions were recorded for the Permanent sub-scale where five instances of verbal attributions were coded across all parents. Interestingly, across gender, parents made 3.5 times more positive attributions overall with an average of 2.4 positive attributions (both

genders) compared to 0.9 (mothers) and 0.5 (fathers) for negative attributions.

As previously mentioned, it is important to stress that the originally developed PAM entailed four dimensions which have also been applied during this study's coding process and are, thus, presented in Table 1 as well as in the inter-rater reliability analysis below. However, since the PAM was reduced to three dimensions by creating one Disposition dimension (Sawrikar et al. 2018a), for concept convergence a parallel structure has been applied for the study's main hypotheses regarding the prediction of attributions (see further below).

Inter-Rater Reliability

Inter-rater reliability among the original four attribution dimensions (each of positive and negative valence, amounting to eight sub-scales) was high across all three inter-rater analysis sessions with a final and overall agreement at $r = 0.85$ across all dimensions/sub-scales. Correlations for each of the eight sub-scales were: Changeable $r = 0.53$, Deliberate $r = 0.72$, Unintentional $r = 0.77$, Unlikeable $r = 0.68$, Likeable $r = 0.88$, Bad $r = 0.84$, Good $r = 0.86$. These are acceptable for all dimensions except Changeable which is borderline, likely due to the very low frequency of occurrence. The related dimension of Permanence scale also could not be analysed for inter-rater reliability due to low frequency of attributions. However, this indirectly means that coding reliability on this specific sub-scale must be acceptable too since both coders agreed that there were less than five instances of Permanent in the entire data set.

Convergent Validity

Correlations for mothers' and fathers' reported attributions between the PAM and the FMSS can be seen in Table 2. For mothers, all scales of the PAM were significantly correlated with their corresponding verbally coded attribution and in the expected direction. Convergence was particularly high for the PAM's Negative Dispositional scale and its equivalent, while convergence was low for the Intentionality scale and its equivalent of Deliberate. Highest convergence pertained to the FMSS's Total Negative Attribution Style scale in relation to the related scale of the Negative Disposition. For fathers, the FMSS's Negative Disposition and Total Negative Attribution Style scales were significantly and positively correlated with their PAM equivalents. Both scales showed highest convergence with the PAM's Total Negative Attribution Style scale. The FMSS's Deliberate scale was not significantly correlated with any PAM scale.

Table 1 Total frequency, means and Standard Deviations (SD) of attributions made by parents

Attribution type	Mothers Frequency	Fathers M (SD)	Frequency	M (SD)
Permanent	2	0.01 (0.08)	3	0.01 (0.12)
Changeable	76	0.27 (0.64)	71	0.32 (0.65)
Deliberate	112	0.40 (0.75)	68	0.31 (0.68)
Unintentional	76	0.27 (0.53)	70	0.32 (0.59)
Unlikeable	48	0.17 (0.47)	18	0.08 (0.27)
Likeable	243	0.86 (1.05)	163	0.74 (1.06)
Bad	83	0.29 (0.63)	30	0.14 (0.44)
Good	286	1.01 (1.12)	228	1.03 (1.14)
¹ Neg. Disposition	131	0.46 (0.79)	48	0.22 (0.54)
² Pos. Disposition	529	1.87 (1.62)	391	1.77 (1.58)
Tot. Negative Att. Style	243	0.86 (1.12)	117	0.53 (0.89)
Tot. Positive Att. Style	684	2.41 (1.82)	529	2.39 (1.82)

¹ Negative Disposition: Sum of Unlikeable and Bad verbal attributions

² Positive Disposition: Sum of Likeable and Good verbal attributions

Attribution Types among Parents

The repeated measures analysis revealed a significant gender effect, $F(8) = 3.03$, $p = 0.003$; with specific gender differences for three sub-scales, namely Unlikeable, $F(1) = 6.50$, $p = 0.012$, Likeable, $F(1) = 5.98$, $p = 0.015$, and Bad, $F(1) = 9.41$, $p = 0.002$. Along these sub-scales, mothers made significantly more attributions than fathers, and this pattern was replicated when the Negative Disposition sub-scale was used to consolidate the Unlikeable and Bad sub-scales, $F(1) = 16.50$, $p = 0.000$. Next, multivariate analysis revealed a significant two-way interaction for attribution type and valence, $F(2) = 126.77$, $p = 0.000$, and attribution type and gender $F(2) = 5.21$, $p = 0.006$. On average, both parents made more attributions on the Disposition dimension (especially the Positive Disposition sub-scale) compared to the dimensions of Permanence and Intentionality; however,

mothers verbalised greater number of attributions compared to fathers within each of the attribution dimensions.

Parent and Child Factors Associated with Negative Verbal Attributions

Results of the hierarchical step-wise regression for examining parent and child factors associated with negative verbal attributions are summarised in Table 3. The table shows the standardised regression coefficients for each variable when entered into the model (β), as well as R^2 change (ΔR^2) for each block of variables. For parent and child factors associated with mothers' Total Negative Attributions, none of the variables measuring covariates and parental mental health were entered into the stepwise regression models. From the variables assessing child

Table 2 Mother's and father's convergence correlations between the FMSS Attribution and corresponding PAM dimensions

	PAM			
	Permanence	Intentionality	Negative disposition	Total negative attributions
Mother's FMSS				
Permanent	n.a.			
Deliberate	0.09	0.38**	0.51**	0.41**
Negative Disposition	0.31*	0.37**	0.65**	0.55**
Total Negative Attributions	0.24	0.45**	0.69**	0.57**
Father's FMSS				
Permanent	n.a.			
Deliberate	0.26	0.21	-0.01	0.19
Negative Disposition	0.32*	0.40**	0.41**	0.48**
Total Negative Attributions	0.39**	0.41**	0.33*	0.48**

** Correlation is significant at 0.01 level (2-tailed); * 0.05 level (2-tailed)

Table 3 Hierarchical step-wise regression analyses examining parent and child factors associated with parental negative attributions during the FMSS

Variables	Mother		Father	
	β	ΔR^2	β	ΔR^2
Total negative attributions				
Block 1				0.02*
<i>Parent age</i>	–	–	0.14*	
Block 2	–	–	–	–
Block 3		0.03**		
<i>CP</i>	0.16***		–	–
Block 4		0.03***		
<i>CP</i>	0.11		–	–
<i>CU traits</i>	0.19***		–	–
Negative disposition				
Block 1	–	–	–	–
Block 2				0.02*
<i>BSI-GSI</i>	–	–	0.14*	
Block 3		0.02**		
<i>ADHD</i>	0.14**		–	–
Block 4		0.05***		0.04**
<i>ADHD</i>	0.12*			
<i>BSI-GSI</i>			0.09*	
<i>CU traits</i>	0.22***		0.19**	
Deliberate				
Block 1		0.02*		
<i>Child gender</i>	0.14*		–	–
Block 2	–	–	–	–
Block 3				0.02*
<i>ADHD</i>	–	–	–0.14*	
Block 4	–	–	–	–
Permanent	n.a.			

Block 1: covariates, Block 2: parent psychopathology, Block 3: diagnostic child CP dimensions, Block 4: CU traits; ***Correlation is significant at 0.01 level (1-tailed); **Correlation is significant at 0.05 level (1-tailed); *Correlation is significant at 0.1 (1-tailed)

mental health, Total Negative Attributions were associated with severity of CPs. However, the effect of CPs became insignificant with the addition of CU traits whereby higher CU traits were associated with greater Total Negative Attributions. At the first-order dimension level, mothers’ Negative Disposition attributions were associated with the severity of child ADHD symptoms and CU traits whereby greater scores for ADHD severity and CU traits were associated with greater negative dispositional attributions. Neither parent nor child mental health and CU traits were associated with mothers’ Deliberate attributions while controlling for child gender; mothers verbalised more Deliberate attributions for their daughters than sons.

For parent and child factors associated with fathers’ Total Negative Attributions, parent and child mental health as well as CU traits were not entered into the stepwise regression models while controlling for parental age; fathers verbalised more Total Negative Attributions the older they were in age. Interestingly, although not entered into the stepwise regression, CU traits still reached significance at the univariate level ($r = 0.13, p = 0.029$) for fathers’ Total Negative Attributions. At the first-order dimension level, paternal mental health and CU traits were associated with the number of Negative Disposition attributions whereby higher scores in psychological distress and CU traits were associated with greater Negative Disposition attributions. Only severity of ADHD symptoms was associated with fathers’ Deliberate attributions whereby greater ADHD severity were associated with less Deliberate attributions.

Parent and Child Factors Associated with Positive Verbal Attributions

Results of the hierarchical step-wise regression for examining parent and child factors associated with positive verbal attributions are summarised in Table 4. For parent and child factors associated with mothers’ Total Positive Attributions, none of the variables measuring covariates, and parental and child mental health were entered into the stepwise regression models. However, CU traits were associated with Total Positive Attributions whereby higher CU traits were associated with lower positive attributions. At the first-order dimension level, mothers’ Positive Disposition attributions were associated with CU traits whereby higher CU traits were associated with lower positive dispositional attributions. No variables were associated with mothers’ Unintentional attributions. However, parental mental health was associated with Changeable attributions after controlling for parent age whereby greater parental distress was associated with less Changeable attributions.

For parent and child factors associated with fathers’ Total Positive Attributions, parental and child mental health as well as CU traits were not entered into the stepwise regression models while controlling for parental age; fathers verbalised more Total Positive Attributions the older they were in age. At the first-order dimension level, paternal age was again the only variable included in the stepwise regression model whereby it was associated with Positive Disposition attributions. Unintentional attributions were associated with severity of ADHD symptoms after controlling for parent age whereby greater ADHD symptoms was associated with more Unintentional attributions. Fathers’ Changeable attributions were associated with severity of ASD ratings whereby greater severity scores for ASD were associated with more Changeable attributions.

Table 4 Hierarchical step-wise regression analyses examining parent and child factors associated with parental positive attributions during the FMSS

Variables	Mother		Father	
	β	ΔR^2	β	ΔR^2
Total positive attributions				
Block 1				0.03**
<i>Parent age</i>	–	–	0.17**	
Block 2	–	–	–	–
Block 3	–	–	–	–
Block 4		0.02*		
<i>CU traits</i>	–0.14*		–	–
Positive disposition				
Block 1				0.02*
<i>Parent age</i>	–	–	0.14*	
Block 2	–	–	–	–
Block 3	–	–	–	–
Block 4		0.04***		
<i>CU traits</i>	–0.20***		–	–
Unintentional				
Block 1				0.03*
<i>Parent age</i>	–	–	0.16*	
Block 2	–	–	–	–
Block 3				0.02*
<i>Parent age</i>	–	–	0.16*	
<i>ADHD</i>	–	–	0.15*	
Block 4	–	–	–	–
Changeable				
Block 1		0.02*		
<i>Parent age</i>	–0.13*		–	–
Block 2		0.02**		
<i>Parent age</i>	–0.11		–	–
<i>BSI-GSI</i>	0.14**		–	–
Block 3				0.02*
<i>ASD</i>	–	–	0.13*	
Block 4	–	–	–	–

Block 1: covariates, Block 2: parent psychopathology, Block 3: diagnostic child CP dimensions, Block 4: CU traits; ***Correlation is significant at 0.01 level (1-tailed); **Correlation is significant at 0.05 level (1-tailed); *Correlation is significant at 0.1 (1-tailed)

Discussion

This study examined both mothers' and fathers' spontaneous verbal attributions about their child who was referred to a specialised clinic for disruptive behaviour problems. During assessment, each parent spoke privately and freely about their child as a person, their thoughts and feelings about their child, and their relationship with their child. Parental attributions were assessed, along dimensions of Permanence, Intentionality and Disposition, with the newly developed

Parental Attributions Speech Sample Coding Manual (PASS coding manual; Schollar-Root et al. 2017). Considering that this was the first study to examine spontaneous parental attributions we first assessed the coding manual's convergent validity as well as feasibility to reliably assess parental attributions. Next, we investigated potential gender differences in verbally coded parental attributions between mothers and fathers. Finally, we examined associations between verbally coded attributions and parental psychopathology, child's profile of behavioural and emotional problems, and child CU traits.

In line with our expectations regarding the validity of the PASS coding manual, the results indicated significant convergence in the expected direction on all sub-scales between verbally coded and self-reported parental attributions using the hierarchical factor structure specified in the PAM (Sawrikar et al. 2018a). Only fathers' Deliberate attributions showed no significant correlations with the PAM dimensions. Previous research has shown that fathers generally report fewer intentional attributions for problematic behaviour using self-report, which the current results suggest is the same while assessing attributions in free speech (Sawrikar et al. 2018a; Hoza et al. 2000). The lack of convergence may therefore reflect a 'floor' effect in assessing intentional attributions for fathers. Strongest convergence pertained to the Negative Disposition/Bad sub-scale as well as the Total Negative Attribution Style for both parents; especially for mothers. Further, aligning with our hypothesis regarding the speech sample coding manual's feasibility, the results revealed moderate to high inter-rater reliability across all attribution sub-scales and high inter-rater agreement for the higher-order Negative Attribution Style scale. This promising result indicates that parental attributions made during the FMSS can indeed be identified and reliably assessed along valid dimensions of parental attributions.

In line with our second set of predictions, results supported the hypothesis that most parents do in fact engage in attributional talk during the five-minute free speech period, even though instructions for the FMSS were open and were not specifically phrased towards the elicitation of attribution statements. This is of relevance as it is the first time we know of that parents attributions have been sampled and indexed outside of measures that cue parents to endorse attributional dimensions chosen by researchers. It also shows that the FMSS, originally a measure designed to assess expressed emotions in the family environment (Malla et al. 1991), can be used to elicit and document naturally occurring attributions parents make about their child and his/her behavioural and emotional problems, and general disposition.

Surprisingly, the data showed that one of the most common attributional dimensions measured by researchers and clinicians, permanence, was rarely considered by parents. Recall that these speech samples were collected before the start of

treatment; it is possible that parents might be especially hopeful about a potential change in their child's emotional and behavioural difficulties. Speech samples taken at other times, especially after treatment cessation, might reveal a more important role for attributions of permanence versus changeability. Notwithstanding this possibility, parents were much more likely to focus on the Intentionality (Deliberate versus Unintentional) and Disposition (Likeable, Good versus Unlikeable, Bad) of their child, which is consistent with previous research examining the types of parental attributions reported among parents of children with CPs (Dix 1993; Sawrikar and Dadds 2018). Interestingly, parents of either gender tended to be more likely to make dispositional attributions about their child than other types of attributions, even though dispositional attributions have not typically been considered in previous research into parental attributions (e.g., Weiner 1980). Moreover, even though these children displayed more emotional dysregulation and misbehaviour than typically developing children the same age, parents tended to make more positive than negative dispositional attributions. These findings argue that parents generally evaluate their own child positively, which is previously thought to help motivate parents for the task of parenting (Goodnow 1988).

The frequencies of these attributions were qualified by a significant parent gender effect. Mothers were generally more likely than fathers to make any kind of attribution statement, and were especially more likely to make dispositional attributions. Interestingly, while mothers made more positive attributions than negative ones about their child in general, they actually made more negative attributions about their child compared to fathers when speaking privately and freely using the FMSS. These findings extend the current evidence base showing interparental differences in parental attributions to explain child problem behaviours (Hoza et al. 2000; Sawrikar et al. 2018a; Snarr et al. 2009).

Finally, it was hypothesised that the three attribution dimensions and overall negative attribution style would be associated with parental and child mental health dimensions. The results indicated that child CU traits were reliably associated with mothers' Total Negative Attribution Style and dispositional attributions. CU traits were also associated with fathers' Negative Disposition attributions and there was a trend towards CU traits correlating with fathers' overall negative attribution style. Importantly, levels of CU traits were significantly associated with spontaneous verbal attributions above and beyond any other child or parent factors. The results represent new findings in the literature as there has been little attention given to understanding parental attributions in context of child temperament. Consistent with Correspondent Inference Theory, the results suggest that parents of children with CU traits are likely to draw negative correspondent dispositional inferences about their child's problematic

behaviour, arguably to make better predictions of future behaviour (Jones and Davis 1965). The results also indicated that these parents were less likely to recognise their child's good qualities as well. Importantly, the current results suggest that these spontaneous parental attributions associated with parents' perceptions of CU traits are identifiable in free speech.

Child ADHD symptoms were another dimension that was significantly correlated with spontaneous verbal attributions. Comorbid ADHD symptoms were associated with greater Negative Disposition attributions for mothers while it was associated with less Deliberate and greater Unintentional attributions for fathers. The pattern for fathers replicate previous research showing that parents of children with ADHD are less likely to view problem behaviours as controllable, which is consistent with a disability model for explaining problematic behaviour (Johnston and Freeman 1997; Johnston and Ohan 2005). While the result for mothers is inconsistent with this model, they are consistent with research suggesting that mothers are more likely to attribute child conduct problems to factors external to themselves than fathers (Johnston and Freeman 1997; Sobol et al. 1989). These results add to the literature suggesting mean level differences exist in negative parental attributions across parents in context of child behavioural problems. Reasons for differences across parents are speculative; however, it might reflect that mothers spend more time with children, thus they may have more experiences of difficulty in managing child behaviour and/or are more susceptible to suffer aggressive child behaviour which may lead them to hold negative perceptions of their child's problems (Patterson and Maccoby 1980; Sawrikar et al. 2018b; Sobol et al. 1989).

An unexpected result of the current study was that severity of CPs was not generally associated with parental attributions. The result is inconsistent with previous work showing greater severity in CPs was positively correlated with problematic parental attributions measured using the PAM in a sample of children referred for the treatment of CPs (Sawrikar et al. 2018a). Those previous findings, however, were found when cues about child behaviour were provided to parents to help standardise the assessment of parental attributions using self-report. The current study examines spontaneous verbal parental attributions in free speech without cues to explain child behaviour. The ambiguity of the free speech task arguably forced parents to rely on schematic or memory-dependent parental attributions that operate automatically and with little awareness (Bugental & Johnston, 2000). The results suggest such processes are influenced more by representations of child temperamental characteristics than the behaviour problems themselves.

Parental psychopathology was also less consistently relevant than expected: parental psychopathology was only associated with fathers' Negative Disposition and mothers'

Changeable attributions. Measures of verbal attributions made in free speech and without cues to parents to explain child behaviour appear to be relatively robust against the influences of parental distress and psychopathology consistent with research examining the influence of parental depression on measuring parenting constructs using self-report or objective methods of assessment (Burt et al. 2005; Richters 1992). The PASS coding manual may therefore represent an objective measure of spontaneous schematic parental attributions which is less susceptible to cognitive bias associated with parental psychopathology.

Overall, the results have important implications to the conceptualisation and assessment of parental attributions. In particular, they bolster arguments to incorporate information about dispositional attributions while assessing parental attributions in context of child CPs (Dix 1993; Sawrikar et al. 2018a). It might be tempting to dismiss the association between CU traits and parental attributions as somewhat tautological given that rating a child as possessing high CU traits is, by definition, making a negative attributional statement about his or her disposition. However, Sawrikar et al. (2018a) showed that CU traits and the PAM are only moderately correlated and predict divergent phenomena. Further, making a clear distinction between parental ratings of the child's disposition and their negative attributions about that disposition, potentially relates to a more conceptually important point. Ratings of high CU traits come from items such as 'not feeling guilt', 'lacking empathy' and 'not showing emotions'. Such items could also characterise children with autism, for example, and might be seen as beyond the child's control, and thus understandable and less odious, and not lead to parents seeing the child as 'not likeable' and 'bad' (i.e., disability model of explaining behaviour). When shown by a child with more functional behaviour problems, such as conduct disorder, parents might be more likely to take them as a sign that the child is bad and unlikeable. Thus, dispositional attributions may be providing more useful information about how these child traits are translated into more global negative attributions about the child that might be toxic to the parent-child relationship.

Clinically, the results support models of practice where practitioners assess parental attributions in the early stages of treatment by inquiring about explanations for problem behaviours (Dadds and Hawes 2006; Scott and Dadds 2009). This includes evaluating spontaneous negative dispositional attributions about the child in addition to attributions of internality, intentionality, and stability. Practitioners should also ensure that both parents have had time to express their concerns in light of interparental differences in parental attributions. This provides for any discrepancy in explaining child disruptive behaviour to be identified and discussed respectfully before beginning treatment to ensure that both parents feel their needs are understood (Patterson and Chamberlain 1994). To accommodate for these considerations, a stage embedded approach

to including parental attributions in treatment might be useful in which intervention focuses on problematic attributions from the first session, helping parents to make their parental attributions explicit so that they do not interfere with treatment implementation (Sawrikar and Dadds 2018).

Certain limitations of this study require due consideration. First, the study investigated parental attributions for a specific, clinical sample of young children (age 3 to 8 years) with disruptive behaviour disorders and it is unknown how these results might apply or compare to spontaneous attributions of parents with children without emotional and/or behavioural problems, not seeking treatment, as well as those of older children. Likewise, this study was primarily comprised of intact families with two biological parents who were well educated and families from a European-Anglo ethnic background. Future studies could replicate the analysis with a representative sample accounting for greater diversity in family background. This was also a cross-sectional correlational study and as such the results do not tease out any putative directionality of influence between parental attributions, and parental and child mental health. Longitudinal designs would be needed to better test the likely cause-effect relationships among these constructs. Another design of interest could be the comparison of spontaneous attributions made during the FMSS before and after treatment. Based on treatment effectiveness and as shown by Sawrikar et al. (2018b), it is likely that negative parental attributions are amenable to change in treatment; however, a subset of families may demonstrate change resistant parental attributions in treatment which can be highly informative in predicting outcomes for the child. Where treatment is unsuccessful, parents might be more likely to make Permanent attributions of a prognostic nature.

It should also be noted that the current study allowed for variations in primary child diagnosis. Most had primary ODD or CD with ADHD; however, some children had ASD or internalising problems as their primary diagnosis. Variations in primary diagnosis may mean that parent's attributions relate to different child problems which potentially influence outcomes of the study. In contrary, we argue that including all children adds to the real world generalisability of the findings where a referred sample for behaviour problems are a complex heterogeneous sample. Parents participating in this study are referred for help with conduct problems and the speech samples are collected in that context. That said, the issue of how heterogeneity in child psychopathology impacts parental attributions certainly warrants further examination and is a potential area of future research.

In conclusion, the assessment of spontaneous parental child-referent attributions via a newly developed coding system was shown to be methodologically sound and feasible. It was seen that parents referred for help do engage in spontaneous attributions about their child and that contrary to most research findings, they focus most attributions on the disposition of the child, and whether the behaviour problems are

deliberate or not, rather than the transience or permanence of the child's problems. Despite their clinical status, most parental attributions were about positive aspects of their child but, compared to fathers, mothers tended to make more negative, dispositional attributions regarding their children with behaviour problems. The dimensions of the child's mental health problems were found to play a greater role than parental mental health. Child CU traits in particular were prominently associated with both negative and positive parental attributions, often adding significant value above and beyond other child as well as parent factors. The findings suggest evaluating spontaneous negative dispositional attributions about the child in addition to traditional attribution dimensions at the time of referral to treatment. This will hopefully help parents express their concerns and provide practitioners with information to improve outcomes for families and children with severe and complex conduct problems.

Compliance with Ethical Standards

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Conflict of Interest Authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in the current study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study. Details on page 6 under Procedures.

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