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Family Functional Formulations as Guides to Psychological Treatment

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Abstract
This paper proposes that clinical practice based on psychiatric diagnoses and categories of harmful behavior may be inadequate at best and harmful at worst. An alternative model of functional family formulations is proposed based on exposure to danger, developmental processes around danger, information processing regarding danger, and strategies for coping with danger. These are encompassed by the dynamic-maturational model of attachment and adaptation (DMM). DMM theory is outlined, then four types of harmful behavior that have resisted treatment are described, each with a case and treatment outcomes: physical abuse, disruptive child behavior, psychosis, and autism. We conclude by describing how these four cases address both children's and parents' need for safety and developmental progress in representing and responding to threats, and also professionals' need for a treatment-relevant nosology of human suffering.

Keywords Assessment/diagnosis · Treatment · Adaptation · Attachment · Developmental psychopathology · DMM

Systemic family therapists have long pursued the Holy Grail of being able to identify how family dynamics are causally related to different types of problems and consequent implications for improving treatment (Minuchin et al. 1978; Bowen 1971). These efforts have diminished because they came to be seen as being overly 'expert' and blaming of parents for causing their children's problems (Dallos 2019). However, there is a resurgence of interest, for example Kaslow and Patterson (2006) describe attempts to develop a systemic model of relational diagnosis for inclusion in DSM and struggles for this to gain any acceptance. Generally, psychological treatments are less effective than would be expected and have shown little or no improvement in outcomes in the recent three decades (Insel 2014; Kaslow and Patterson 2006; Wampold 2015). Lack of clarity about how and why different treatments work or fail has resulted in a pragmatic approach to treatment in which eligibility for psychological services has been tied to psychiatric diagnoses. These, however, are inconsistent theoretically and lack clarity about the causes of problems and whom to target for intervention. In systemic therapy the problem is not simply the identified patient, but also the functioning of the individual's family. However, if the problem is in the family, then there is the issue of who receives the treatment—everyone altogether or different family members separately. Despite this relational view, most family therapy is nevertheless conducted in terms of currently predefined symptom-based categories, which are assigned to an identified patient despite the fact that no case fits perfectly, the categories lack empirical validity, and cases of child maltreatment and criminality fit very poorly.

Three core issues arise: defining the problem, who defines it, and who should receive treatment; these problems may reflect gaps in the conceptual knowledge base. There has been a tradition in systemic family therapy of attempting to address these issues by the therapist developing functional formulations to link family typologies to different clinical presentations (Minuchin et al. 1978; Dallos and Draper 2010). Contemporary family therapy, in contrast, emphasizes a collaborative process whereby therapists together with family members define these three issues. We think that both approaches are necessary because the medical illness discourse inevitably permeates the relationship between

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therapist and family. Family members, including the ones seen as 'having' the problem, define themselves and their difficulties in terms of diagnostic categories. This is compounded by the fact that entry to services and payments of health insurance typically require a diagnostic label.

Formulation

Formulation has been advocated as an alternative to diagnosis in that it offers a detailed analysis and explanation of problems leading to specific intervention strategies (Flåm and Handegård 2015; Johnstone and Dallos 2013). In family therapy, the earliest versions of formulation were the functional theories regarding family typologies of problems. These were succeeded by the notion of 'progressive hypothesizing' which contained the idea of formulation as a dynamic and evolving process and also opened formulation to being a progressive and collaborative process with family members who, together with the therapist, defined the meaning of their difficulties (Selvini et al. 1980; Perkins et al. 2019). However, lacking a developmental and evolutionary model, these attempts were largely unsuccessful. Moreover, complex and non-transparent situations, such as symptoms in one family member serving functions for other family members, might not be discernable or emotionally acceptable, especially if they lead to a sense of feeling blamed. In such circumstances, families may retreat to the perceived safety of diagnostic labels.

DMM Family Functional Formulations

We suggest building on systemic functional formulations by adding ideas from DMM attachment theory. The central idea is the function of family relationships to promote survival of each individual and their children. The DMM is an integrative expansion of the Bowlby–Ainsworth theory of attachment. A crucial contribution of DMM theory to understanding harmful behaviour is highlighting humans' capacity to adapt to a wide range of threatening conditions. The DMM treats danger as a near universal aspect of life (Centers for Disease Control and Prevention 2016; Felitti 2009). Early on, when children cannot protect or comfort themselves, parents or other attachment figures do so, helping children to learn to protect and comfort themselves. The importance for individual and species survival of progressive adaptation, based on a slow maturing and plastic brain, cannot be over-emphasized. Of course, near universal endangerment does not result in near universal maladaptation. The difference, we think, is parents' ability to protect and comfort their children in each child's zone of proximal development during the event and later, as the children mature. For example, studies of people diagnosed in *adulthood* with chronic PTSD (Heller 2002) and eating disorder (Ringer and Crittenden 2007) have shown that they display on-going psychological trauma from unprotected and uncomforted danger in *childhood.* The point is that the DMM places the developing mind between dangerous events and their outcomes.

The central DMM ideas that are relevant to increasing the effectiveness of psychotherapy are:

1. *Safety and sex*. Placing survival of self and progeny as the evolutionary basis for adaptation/maladaptation (Bowlby 1969/1982), thus including sex and reproduction as part of attachment (Crittenden 1997), gives a focus to formulation.
2. *Unprotected and uncomforted danger*. Finding the roots of maladaptation in *unprotected* and *uncomforted* danger experienced early in life (before the brain is fully mature) clarifies parents' roles as including protecting themselves sufficiently to promote survival of their children.
3. *Influences on individual and family functioning*. DMM theory integrates information about functioning from many sources. These range from genes that regulate maturation to neurological structures that apply matured possibility to actual experience, to psychological processes involving primed neural networks that predispose behavior, to relationships that give meaning to behavior, to cultures that promote or discourage various styles of behavior. See Fig. 1. These influences are dynamically interactive; for adaptation/maladaptation they converge on individual psychology in attachment relationships.
4. *Intra-personal information processing and inter-personal protective strategies*. Individual differences in response to threat consist of patterns of *inter*personal behavior and of *intra*personal psychological information processing. This is crucial to combining intrapersonal psychology with interpersonal relationships.

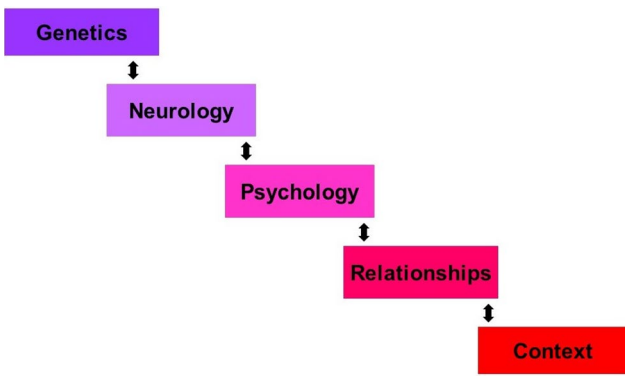

Fig. 1 The dynamic interplay of influences on adaptation. (Used with permission, Crittenden 2016)

5. *Functional definitions of behavior*. Recognizing that specific behaviors can serve different functions and functions can be fulfilled by different behaviors is crucial to moving beyond symptom-based diagnoses. Further, the function of a behavior or symptom at one point in development might not be the same at another developmental period.
6. *Multiple sources of information*. Recognizing that information comes from different sources, including at least the body, external contingencies with the self, and associated feelings can focus therapists on the full range of available information. This information can be derived from a life-span set of assessments of attachment.
7. *Brain maturation and transformations of information*. Neurological maturation affects how information can be transformed, beginning with simple omission of information from further processing and continuing, at progressively older ages, to falsification, distortion, denial and, by late adolescence, self-delusion. Transformations provide an empirical basis to hypothesis building, with strategies being seen as *strengths* when they are organized (thus moving away from a deficit model of maladaptation).
8. *States of conscious awareness*. Recognizing that information can be pre-conscious, verbal, or reflective, dependent upon maturation of the brain and transformations of information, opens hypothesis-building to both family members' conscious information and also non-conscious processes that influence behavior.
9. *A categorical and dimensional classificatory system*. Expanding Ainsworth's classificatory system of individual differences for responding to threat in both categorical and dimensional ways moves hypotheses regarding protective functioning beyond forced-choice categories to a relational system that is open to both clustering and unique specification for each family (Crittenden and Spieker 2018).
10. *Adaptation versus maladaptation*. Defining adaptation/maladaptation as an interaction of threat with the availability of effective personal and interpersonal strategies for coping with threat, in which unprotected and uncomforted children develop age-defined 'psychological short-cuts' using transformed information (Crittenden 1992, 2016), moves family functional formulation away from an illness model.

DMM attachment theory defines the role of therapists as transitional attachment figures to family members, thereby giving therapists expertise to work reciprocally (a) in each family member's zone of proximal development, for the purposes (b) of expanding each person's array of possible protective strategies (recognizing that some transformations of information block out new information therefore impeding change processes), and (c) of seeking both individual strategies appropriate for the person's age and maturation and also the set of family relational strategies that provide the maximum benefit to the family, and (d) guiding family members to repair breaches in relationships and incorporate new information into existing psychological processes, i.e., how to constantly update their protective strategies to fit changing contexts.

These ideas require considerable expertise if they are to be addressed consciously by therapists. Ironically, parents are ordinarily expected to do this without conscious awareness or professional labels for daily family interactions. We think that these ideas from DMM attachment theory can inform therapeutic responses to harmful behavior and that the process is best described as a family functional formulation.

DMM Family Functional Formulations and Harmful Behavior

DMM family functional formulations (FFFs) provide an alternative to psychiatric diagnoses or categories of harmful behavior. DMM FFFs combine careful description of problematic behavior with hypotheses about its function for each person (thereby addressing why the harmful behavior is maintained) with suggestions for how to modify the need for the behavior (thereby suggesting treatment approaches). Unlike treatment that addresses only one person's needs, the needs of all family members are considered—even if family members do not participate in the treatment.

We distinguish between DMM *general functional formulations* (GFFs) that synthesize many families' experience and DMM FFFs that are specific to a particular family. Although GFFs are helpful in illuminating aspects of family functioning, they should not override attention to differences among similar families. Further, families with the same harmful behavior should not be assumed to fit the same GFF. To the contrary, we expect equifinality, with more than one developmental and psychological process underlying psychiatric diagnoses and harmful behaviors, e.g., PTSD (Crittenden and Heller 2017) and eating disorders (Ringer and Crittenden 2007). We also expect multifinality, with different symptom diagnoses and harmful behaviors leading to similar functional outcomes (von Bertalanffy 1968). GFFs can be validated in comparative research designs whereas FFFs are validated and modified through treatment actions, feedback, and reformulation.

Four Examples of DMM FFFs

To illustrate our model of family functional formulation using the DMM, we examine four clinical issues, in order of transparent versus transformed information: physical abuse, behavioral disorder, psychosis, and autism. Each is discussed in terms of GFFs, with an example of an FFF for which the implications for treatment are outlined. Treatment, for each case, is described in the final section of this paper.

1. Physical Abuse (Omitted Feelings and Images with Acquired Prescriptive Sematic Rules)

Child abuse seems inconsistent with parents' protective role. However, when families' circumstances and interpersonal dilemmas are formulated through a family functional formulation, clinicians can often understand why parents behaved as they did, thus becoming able to assist parents to prevent violent behavior. In cases of physical abuse, we look for predisposing conditions such as attachment threats and injuries and extra-familial threats (e.g., debt, work problems, isolation). We also seek the trigger that precipitated the instance of violence; this trigger is often tied to a past dangerous experience and is known only in a preconscious imaged way. Protective resources, such as times when problems were resolved or protective family members, can support the treatment (Flåm and Handegård 2015).

Many people who are aggressive use self-protective strategies organized on the basis of prescriptive semantic 'directives' and omit information about their own feelings from awareness, especially when they feel threatened. They might up-regulate anxious arousal so as to perceive all possible dangers (with the risk of mis-perceiving non-threats as threats); alternatively, they might down-regulate arousal and dismiss feelings (with the risk of sudden disinhibition of overwhelming negative feelings) (Johnson 1995). Neither set of transformations promotes reflective thinking that could identify the transformations (Crittenden 2016). In our example, treatment enabled 'Pete' to connect his childhood experiences of fear when being bullied to his aggressive behavior toward his older stepson.

Pete's Violence to his Stepson

Pete was a stepfather to his wife's sons (aged 11 and 13) and biological father to their sons (aged 2 and 3). One morning Pete went into the kitchen and found his 2-year-old crying, with a red weal across his forehead; his stepson stood nearby. Assuming that he had caused the wound, Pete jumped on the older boy, injuring him severely. His wife heard the screaming, came running, then called an ambulance and the police. Pete's stepson was taken to hospital; Pete was arrested and sent to prison.

When Pete was released, he and his wife wanted to live together as a family. Like most men released early for good behavior, Pete accepted full responsibility for his own inappropriate behavior, sometimes even excessively so, without considering exonerating circumstances or others' partial responsibility. Pete said that the cognitive information in CBT in prison had really helped with his 'background' anger, but, '*My attack on my stepson was 'explosive' anger and I do not understand that—so, hand on my heart, I cannot promise I will not do that again*'. Pete's 'back-story', narrated early in treatment, revealed more than he had expected.

An Olfactory Image of Forgotten Violence

Pete's parents separated when he was three years old; he had not seen his father since. He knew that his father had been violent to his mother, but Pete said he had no memory of this. Both Pete and his father were carpenters. After his mother remarried, his older brother bullied him, and his stepfather disciplined Pete very harshly. Pete learned to inhibit his fear to avoid bullying and punishment, but he had not learned what he should do until being in prison.

We had warned Pete that talking about the past was likely to 'stir the pot' of memories that were not conscious and to not be surprised if memories surfaced. One Saturday morning, Pete had been in his workshop. He telephoned, sobbing uncontrollably, hardly able to say what was happening. He kept saying that it was 'the smell of the sawdust.' Together, we speculated that Pete had been exposed to his own and his mother's fear as an infant, and that the smell of sawdust was the imaged trigger for violent memories to emerge. This helped Pete to understand 'explosive anger' and illuminated the links between fear, bullying, and his violence to his stepson. Pete described it as '*bigger people beating up on littler [sic] people*' and he was poignantly aware of the terrible irony in this.

Formulating Pete's Problem

The formulation revealed the impact of his 'forgotten' feelings during childhood trauma on Pete's protective strategies, both as a child and in adulthood. The DMM notion of safety and protection in close relationships clarified his self-protective strategies and how his violent actions had been intended to protect his son. Revealing non-conscious imaged memories was crucial to integrating Pete's intentions with his behavior.

2. Disruptive Behavioral Disorders in Children (ODD and ADHD)

Complex family patterning: *Parents*: Denial of negative affect plus substitution of external guides for denied feelings; *Older son*: massive omission of 'forbidden' negative affect with uncontrolled intrusions; *Younger son*: contingent exaggerated distortions of negative affect.

About half of all children diagnosed with Oppositional Defiant Disorder (ODD) also have a diagnosis of Attention Deficit Hyperactivity Disorder (ADHD) (Barkley and Murphy 2006), a chronic condition of inattention and impulsive behavior. There is concern that some therapists treating children with disruptive behavior only target symptoms, often with stimulant medications, without identifying parental mental health and family issues associated with child disruptive behavior (Sayal et al. 2015; Timimi et al. 2011). Here we consider two cases in which disruptive behavior symptoms emerged because of their interpersonal function within the family, whether or not there was also an underlying biological vulnerability for ADHD. We propose that disruptive behavior can be a child's attempt to elicit attachment responses from the threat of parents who are inconsistently available (Marvin and Stewert 1990). The symptoms of ADHD can hold parents' attention or distract their attention from spousal problems. Either way, parents' inconsistent responses can lead to escalating demands by the child that frustrate the parents, leading to a cycle of ineffective interactions. Such a familial explanation might fit many cases of comorbid ADHD and ODD; the Doyle family is an example. Because the parents sought treatment for their children, as competent parents do, and had been approved to adopt the children by the child welfare system, the therapists accepted the assumption that the problem resided in the children.

The Doyles

Pavi, age 6, had been in therapy for 2 years and Stefan, age 4, for more than a year when their therapists, seeing little improvement, sought a consultation. By this time, the parents each had a therapist for themselves, making four therapists working with the family. Mrs. Doyle was the primary caregiver and Mr. Doyle worked long hours.

Pavi's problems (biting, hitting, attacking Stefan, and dangerous behavior such as running into the street) began after a cross-country move far from relatives. Some months after Pavi's treatment had begun Stefan's teacher reported he had become uncooperative, aggressive, and had difficulty calming down after being agitated or aggressive. The teacher urged the Doyles to have Stefan evaluated for medication. Mrs. Doyle reported being exhausted with managing the boys' aggression toward each other and, occasionally, to her.

Assessment of Attachment

The family members participated in individual DMM attachment assessments and a whole-family interview. Mrs. Doyle's protective attachment strategy was idealizing her parents, not doing the wrong thing (i.e., inhibit before acting), and trying to do the right thing (according to her parents and parenting books). Mrs. Doyle openly missed her family, but denied feeling any anger. Mr. Doyle's protective attachment strategy was similar: idealizing his parents, putting himself down, and trying to say and do the right thing. He distanced himself from sadness, fear, grief or anger by omitting them from awareness.

As the older son, Pavi's self-protective strategy was to comply with instructions, be good, and care for his mother if needed. Pavi rigidly inhibited anger, sadness and fear until he could not—and then he exploded in angry aggression. Stefan used the opposite strategy; he alternated coercive displays of vulnerability and disarming coyness with sudden displays of intense anger. Especially after Pavi entered treatment, Stefan openly challenged his parents. Nevertheless, both parents maintained modulated, even pleading, demeanors, such that their responses to Stephan became non-contingent and unchanging, whether he was calm and cooperative or defiant.

Formulating the Family's Problem

Both parents tried to do the right thing from the perspective of others, including their sons, which required omitting their negative feelings from awareness. They felt inadequate when their children were angry, could not assert their hierarchical authority, and instead often deferred to their children. This imbalance was the critical cause of the family's problems. Stefan filled the resulting power vacuum with a coercive strategy. For him, acting emotionally was more effective in the competition for parental attention than Pavi's inhibition. When Pavi's inhibitory strategy broke down explosively, it frightened his parents. They also were trapped into Stefan's frequent and sudden alternation of aggressive and disarming behavior. These two different uses of aggression left them uncertain of what to do, afraid of the boys, and even more unwilling to display anger themselves. The family was in a self-maintaining downward spiral of distress.

Three problems with individual treatment of children are highlighted by the Doyle family: (a) Both boys would qualify for psychiatric diagnoses of 'ADHD' or possibly 'ODD', but the basis for each boy's behavior was very different. (b) Individual treatment of one boy had been followed by escalating problems until all family members were in treatment; this suggested that Pavi's treatment had destabilized the family. (c) With treatment focused on inhibiting disruptive behavior rather than on its function, the basis of the problems

had been overlooked all together. Indeed, the therapists had accepted the parents' premise that the problems resided in the boys; this prevented anyone from seeing the larger family situation in which the parents' inhibition of anger and abdication of parental authority generated and maintained the distressing behavior.

3. Psychosis (Displaced, Denied, and Delusionally Transformed Information)

Psychotic disorders are disabling for patients and their families and require extensive treatment resources. They are relatively frequent: a 12-month prevalence of 0.4% has been estimated (Moreno-Küstner et al. 2018). The symptoms include delusions, hallucinations, thought disorders ("positive" symptoms), inhibition of initiative ("negative" symptoms), and anomalies of cognitive functioning (American Psychiatric Association (APA) 2013). Nevertheless, there is lack of consensus regarding the diagnostic criteria, etiology and pathophysiology of these disorders (Patel et al. 2014). Psychotic episodes can recur, become chronic, or remit completely (Crismon et al. 2014). We note the similarity between the symptoms of psychosis and DMM inhibitory strategies when these are accompanied by explosively disinhibited negative affect.

Formulating Psychosis

Understanding psychosis requires looking outside the family system to understand how a family problem is not resolved and, instead, may be maintained by professionals. Because developmental transitions (for example, the birth of a child or the transition to adulthood) require a radical re-shaping of family attachment structures, such periods can threaten families when their structure is rigid and based on denied information, particularly information tied to trauma. In these cases, a family member behaves as if they would be destroyed if the transition were allowed to occur. Because transitions are unavoidable and culturally regarded as normal and desirable, these fears cannot be expressed openly, nor even thought about clearly. Instead, the person in transition behaves in seemingly irrational ways that function to halt the transition. Sometimes diagnosing a psychotic state in that person and 'protecting' everyone by hospitalizing the 'psychotic' person or prescribing medication (that restores inhibition of the forbidden 'psychotic' behavior) functions to maintain the family dysfunction.

The DMM GFF for psychotic disorders considers them to be a response to *irresolvable developmental conflict* between the approaching context that requires new behavior and the 'old' context that requires incompatible behavior. The inability to resolve the conflict precipitates the 'psychotic' crisis. For example, older adolescents need to leave home to start their own families while some parents need them to remain at home. Or a woman might believe that she cannot meet both her current life demands and also those of being a mother, with the outcome being postnatal psychosis. The family member whose behavior must both change and not change can experience extreme peaks of arousal, displayed either as explosive forbidden behavior or somatic anomalies. This signals that the family system has exhausted its resources, and needs help from professional systems to manage the crisis. As we noted, professional help might maintain the problem.

Giovanni and his Family

Twenty-four-year-old Giovanni and his two older siblings lived with their parents; Giovanni appeared learning disabled, only one adult child had a job, and none had a romantic relationship. At age 15, Giovanni had first attracted professional attention when he was seen having sex with older men near the local graveyard. His parents arranged psychiatric care for him. Giovanni told his psychiatrist that he was in daily contact with his paternal grandfather (dead before his birth) who was protecting him by telling him what to do. Giovanni was diagnosed with schizophrenia. Both Giovanni and local rumors hinted at sexual abuse in and out of the family by Giovanni's father (possibly involving his sons), but nothing was substantiated. When asked, all family members denied sexual abuse with outrage. The family terminated the psychiatric support for Giovanni without professional agreement.

After several years of relative stability, Giovanni came to professional attention again with gait anomalies indicative of a possible neurological dysfunction; in hospital, no neurological problems were found, but Giovanni considered hospitalization one of the best experiences in his life. A few years later, Giovanni's parents complained that he refused to leave his bedroom, had an inverted circadian rhythm, ate very little and barely spoke to anyone. During a two-month psychiatric hospitalization, Giovanni's mother was tender and affectionate to him, unlike at home. On his return home, the family reported that all was well.

Formulating the Family's Problem

Giovanni's AAI showed evidence of delusional repair of family problems (his dead grandfather advising him to avoid people from the community) and of his arousing anger (which was displaced to hostile people who spread defamatory lies about his family). This crisis was formulated as Giovanni's recurrent need to say and not to say that he and his brother had been sexually abused by their father while continuing to live at home. This information

was transformed somatically in ways that elicited external support for him and the family while not revealing the problem. Attempts to address the sexual abuse generated further 'psychosis' by threatening the family with dissolution rather than facilitating alternative developmental pathways.

Several other conditions in the family made the situation more complex. The parents' marriage was fragile because it was based on hiding the father's homosexuality. The angry mother attempted to keep the family together using coercion. The father and sons sought comfort and connection through physical closeness. The therapists understood the situation as Giovanni experiencing conflict between establishing relationships outside the family and maintaining the integrity of the family, but displacing it on inappropriate extra-familial sexuality.

The psychiatric diagnosis of psychosis relieved the immediate crisis while maintaining, and further obscuring, the underlying family problem. The children's development was frozen at the point of crisis. The resulting chronic cognitive and somatic symptoms functioned to tie the family together and periodically activated services as a 'relief valve.'

The problem to be resolved by treatment was children's inability to leave home without harming their parents and, possibly, exposing sexual abuse.

4. Autism (Two Generations of Multiple Transformations, Including Falsification and Denial)

Autism is described as a neuro-developmental disorder of genetic origin. Nevertheless, the genetic evidence is lacking (Crittenden 2017; Timimi et al. 2011) and rates of diagnosis have risen faster than genes can change. High rates of occurrence among extended family members could reflect either genetic or familial influence, but there are very few studies of family functioning in the last 50 years. Among the few family studies, mothers of children with autism often manifest dismissed psychological trauma for childhood events (Roberts et al. 2013) and the children often display inhibitory strategies (Brewerton et al. 2017; Crittenden et al. 2014, 2018). Like other psychiatric diagnoses, the central indicators of autism (limited social and linguistic communication and repetitive behaviors) overlap with many other conditions, such as anxiety disorders, self-harm, and eating disorders. Two points are central: (a) the diagnosis as now applied probably refers to several different conditions (Timimi et al. 2011) and (b) severe cases of autism, with strong evidence for neurological differences and inhibitory strategies, no longer constitute the majority of samples (Stedman et al. 2018). This suggests the need to explore individual differences among families with a child diagnosed with autism.

Formulating One Family with Autism

Penny (age 9 years) had diagnoses of autism and cerebral palsy, which impeded her ability to play with other children. The cerebral palsy was a result of a home birth in which Penny had suffered brain damage from anoxia. Penny had a younger sister; both parents were highly educated, meticulous, and semantically-oriented. Penny's mother sought treatment because Penny had mood swings that included 'meltdowns' in which she attacked her younger sister. At school, she refused to conform and was aggressive. Penny's mother believed that 'autism' explained Penny's behavior; this left her feeling helpless to change her daughter's behavior. She described Penny's father as possibly autistic himself; although he chose not to attend the family treatment, his role in the family was considered as we developed the DMM FFF.

Penny's mother's AAI revealed an inhibitory strategy of compulsive self-reliance (with dismissed feelings and attachment needs) along with dismissed psychological trauma for her parents' unavailability and consequent emotional neglect. She described growing up in a commune with her parents who had had very little time for her, using vivid images of being left alone, staring out of a window into the garden. A recurrent theme was her mother's unreliability. For example, she was sometimes stuck at school for hours waiting for her mother to turn up, but she negated any blame by laughing (thus transforming anger to false positive affect). On the other hand, she repeatedly emphasized a corrective semantic intention of being reliable and present for her own daughters. She did not notice the discrepancy between her laughter and her distress as a child.

Formulating the Family's Problem

Penny's mother constructed her model for raising her daughters from explicit semantic ideas that reversed her parents' behavior rather than from experienced sensory memories of being cared for and comforted, by either her parents or her husband. Strikingly, she expressed no emotion regarding Penny's birth and consequent cerebral palsy and saw no similarity of it to her parents' neglect of her. Her most pressing concern was Penny's meltdowns and she sought advice about these.

Many family conditions contributed to Penny using a coercive strategy that included tantrum meltdowns. Penny's mother had conflicting experiences and intentional representations of parenting. She denied the trauma for Penny's birth and loss of the well child she had wanted, nevertheless guilt made her unwilling to constrain Penny. As a result, she became vulnerable to Penny's attempt to get her own way. At the same time, Penny's autism called for vigilance to prevent

meltdowns, but her mother found it painful to attend to her harmed child.

Because Penny's mother was unaware of her conflicting dispositional representations and transformed information, she could not be responsive and predictable. Penny became frustrated when limited in any way; her emotional displays escalated very quickly. This triggered anxiety in her mother that, in turn, fueled Penny's arousal in a self-maintaining, reciprocally escalating process (i.e., a circular, self-maintaining process). The unpredictable responses of Penny's mother were mirrored between her parents where her father attempted to enforce discipline while her mother was more *laissez–faire*. This controlling/passive dynamic enabled Penny's use of coercion. In addition, Penny became angry when her mother tried to protect her sister from Penny's aggression, both envying her well sister and resenting her mother's 'favoritism.'

Penny's coercive strategy, including meltdowns, was attributed to 'autism', thus reducing her mother's sense of agency and helping her to avoid the guilt she felt about Penny's birth. As Penny reached school-age, she began to employ the notion of 'autism' as a strategy that allowed her to seem unable to control her emotions, thus augmenting her ability to coerce her parents. Doing this, however, indicated that she did have control over her behavior. For example, she claimed to have 'sensory issues' to avoid unpleasant activities.

Penny's mother showed some indication of reflection in her AAI, but it was only about understanding the influence that her parents' childhood experiences had had on their parenting of her. She was not able to reflect on her own behavior.

Treatment Planning and Implementation with DMM FFFs

FFFs permit individualized planning of interventions, including hypotheses about the priority of therapeutic actions and about counter-indicated approaches. FFFs lead to treatment hypotheses that can be tested and modified during the session-by-session treatment process. Thus diagnosis, treatment and feedback become a recursive family-specific process. For each of our topics and associated cases, we discuss how the General Functional Formulation informs the specific Family Functional Formulation and its application to the case example. We focus particularly on exposure to danger, developmental capacity to transform information at the time of exposure, reorganization following the danger, developmental timing of treatment, and inclusion of family members in the treatment process.

Treating Child Abuse Through DMM FFF

In spite of a marked reluctance to offer relational therapy in cases of family violence, individual work has several constraints. These include limited opportunity to discover and disarm the triggers of violence, to learn to repair difficult interactions and to balance the 'seesaw' of emotions within violent relationships. These limitations suggest the need for relational work. Safety and protection are top priority in relational work. Contra-indications for relational therapy include the violent person's unwillingness to take responsibility for their violent actions (Sammut Scerri et al. 2017). Together with the therapists, all family members make a safety plan, based on past violent episodes, and a no-violence contract. These help family members learn to predict and prevent dangerous arousal, de-escalate arousal, and expand their repertoire of coping strategies. The DMM provides us with a powerful explanatory framework for describing the development of family members' self-protective strategies as well as a model of triggering traumas (Crittenden 2016).

To elicit representations of trauma, we ask for an episode of violence, then 'walk around in it', exploring thought, feeling, intention, escalation into violence, and consequences. We support family members to repair and heal their relationships by co-regulating arousal, acknowledging and repairing shame, hurt and disappointment, and communicating straight forwardly. We listen carefully to how people talk about their behavior that harms others and about safety. Put another way, we use live discourse analysis (cf. Crittenden and Landini 2011), and behave in ways that reduce the need for self-protective strategies. This helps family members 'to stand in the emotional shoes' of others. Accepting responsibility for one's actions while being comforted is often very new for most people who have acted violently. It becomes the basis for thinking about why humans harm the people we love, and who love us.

We asked Pete and his family to describe the episode of violence that sent him to prison, and then slowly tracked what happened—thought, feeling, action and intention of all family members. When Pete said, '*I only hit him*', we noticed the use of the minimizing word 'only' in the context of agentic speech. We explored the word 'only' by asking what we would see if we were there, how you hit him, where you hit him, and so on. At the same time, we underlined Pete's need for agency held in the words '*I hit him*'. When we asked what we would see, Pete slowly revealed his vulnerability—and need for an aggressive response. We also listened for the triggers, such as '*the smell of sawdust*', that threatened Pete. Pete was supported by the therapist's empathic response that avoided exonerating him while concurrently acknowledging that his fear of being powerlessness to protect his son underlay his action.

Treating Behavioral Disorders in Children Through DMM FFF

The key to treatment for many behavioral disorders in children is understanding the structure of family self-protective strategies. The Doyle family dynamics illustrate that children's disruptive externalizing behavior can have origins in both an inhibitory protective strategy and also an exhibitory coercive protective strategy. That is, disruptive behavior can function differently for different children.

The Doyle FFF suggested how their sons' opposite strategies evolved and where intervention could result in positive change for the whole family. The therapeutic focus shifted to the parents, helping them to feel their anger and recognize it as a source of important guiding information, thus enabling them to feel confident in their own authority. As they increased the clarity and predictability of their behavior, they became appropriately responsive without reinforcing either inhibited or coercive behavior in the boys. The goal was for their children to feel safer, with Pavi inhibiting negative feelings less and Stefan inhibiting them more. The greatest resistance to change came from the therapists who feared having to change their focus on one child to working collaboratively with the whole family and each other.

Treating 'Psychotic' States Through DMM FFF

Treatment approaches for psychosis include psychotherapy (Garety 2003) and pharmacological therapy (Patel et al. 2014), but only 20% of patients report favorable treatment outcomes (American Psychiatric Association (APA) 2013; Crismon et al. 2014). We propose that a DMM FFF might yield more success.

A DMM GFF can inform work with families with a member displaying psychotic states by revealing that: (a) past dangers that are unthinkable or unspeakable have resulted in rigid use of extreme strategies by one or more family members so as to protect the vulnerable person; (b) the current protective organization of the family, that appears to protect the 'psychotic' person, actually protects other 'normal' family members, thus explaining why treatment is ineffective; and (c) the function of high arousal states to motivate 'psychotic' behavior (that counters the depression of inhibition) actually achieves protective escape for the family until the crisis passes.

The last point is important because the GFF for psychosis indicates that the information disposing the psychotic behavior has been transformed to omitted, denied, displaced, and delusional information, often differently for each family member. Having a guide to these complex transformations might make possible the progressive restoration of the communicative function of symptoms. Of course, this action is possible only after defusing the danger that this forbidden information could trigger.

Giovanni's psychotic behavior pointed to the danger of desire for comfort being expressed through sexuality, while also signaling that his need to find ways to build relationships outside the family was urgent. Therapeutic work needed to address how the parents' possible sexual abuse of their sons contributed to the dilemma of needing help while precluding admission of the reason for needing help. Consequently, the family had to refuse help when it threatened to uncover dangerous information. Repetition of this cycle led to Giovanni's increasingly somaticized and negative symptoms. Professionals' attempts to address Giovanni's need to establish relationships outside the family were stalled by the mother's desire to keep her children at home and the parents' need to avoid charges of sexual abuse. It is unclear when a protected extra-familial placement might become available. Until then—or until the parents are safe from prosecution—the death of the now elderly parents is the next predictable destabilizing transition.

Treating Meltdowns Tied to Autism Through DMM FFF

An unfortunate outcome of genetic explanations of autism is that treatment is directed toward management of presumed hard-wired symptoms rather than toward their reduction or elimination. One of the most distressing symptoms is 'meltdowns' or severe explosions of anger and anxiety. In DMM terms, this suggests that the children are either (a) extremely anxiously inhibited and unable to prevent trauma-elicited disinhibition or (b) highly anxious and using a coercive strategy to manage uncertainty in relationships. The difference between these two GFFs is, in the first case, the parents' consistent rejection of the child in response to negative behavior versus, in the second case, parents' rapid arousal as a meltdown commences (thus, causing children to escalate their meltdowns). Both processes are encompassed by the diagnosis of 'autism' but require different treatments. Penny and her mother best fit the second GFF.

When Penny's mother sought help with Penny's meltdowns, we mapped a 'circularity', that is, we mapped the sequence of procedural actions and emotions that maintained the problem. Subsequently, we explored how Penny's mother's conscious semantic and episodic accounts conflicted with observed procedural processes. See Fig. 2 for an example of a circularity in Penny's family.

Mapping and discussing this circularity helped everyone to see that Penny's meltdowns were embedded in a procedural family process. When Penny's mother tried changing the morning routine, it reduced the meltdowns. We then discussed other causes of Penny's meltdowns, such as her frustration with her cerebral palsy. Over time, changes with

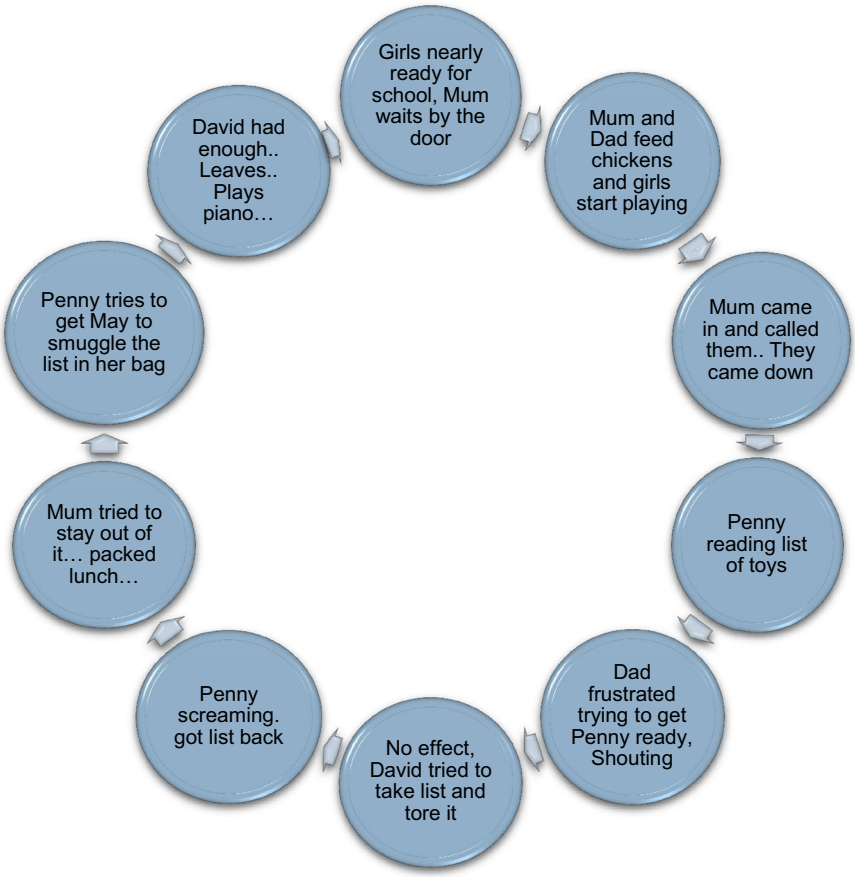

Fig. 2 Example of recurrent daily circularity in Penny's family

Penny positively affected other members of the family. A negative circularity was transformed into a virtuous cycle of increasing attunement of procedural behavior and semantic understanding, in each family member's zone of proximal development.

Discussion

DMM FFFs offer a systemic model that describes the interdependence of family members' developing minds around strategies for protection from danger (Crittenden et al. 2014). The model is based on a layered array of causal conditions from genes to culture (see Fig. 1), but centers on how the psychological development of each family member is shaped by and contributes to the adaptation of all family members. Families are seen as progressively enabling children to recognize, prevent, and recover from threatening events. When parents are unable to do that, in each child's zone of proximal development, treatment may be needed.

More than other approaches to formulation, DMM FFFs address the role of danger in eliciting protection and comfort and the implications of the absence of these to immediate and long-term adaptation. By addressing the development of information processing about danger, the DMM adds focus and granularity to understanding distress in families while retaining family systems theory's conceptualization of the family as a functional whole and sharpening the selection of treatment strategies.

As compared to psychiatric diagnoses or categorization by type of harmful behavior, our cases demonstrate equifinality, whereby different family processes yield similar symptoms, for example, inhibitory and coercive protective attachment strategies can both yield 'acting out' behavior. This suggests the need for different treatment strategies for what might appear to be the 'same' problems. Our cases also show multifinality, wherein the same family process can yield different outcomes. For example, sudden disinhibition can display as both 'psychosis' and parental abuse; similarly, unpredictable parental behavior can lead to both autistic meltdowns and disruptive behavior problems. DMM FFF helps to clarify problems of co-morbid and changing psychiatric diagnoses.

The DMM conceptualization of adaptation to danger offers a paradigm shift away from categorizing deficits toward identifying strategic strengths, albeit sometimes past strengths have stood in the way of on-going adaptation. The

DMM's developmental framework promotes capturing the crest of maturation to maximize the possibility of change.

Families come to therapy because they do not understand why they have problems or how to resolve the problems. They expect skill from their therapist. Being able to formulate based on DMM theory and assessments can jumpstart the beginning of therapy by giving the therapist a preliminary guide to a family's functioning. Although family therapy has tended to eschew formal assessment, formulation improves when therapists have a source of information that is not constrained by family members' psychological transformations. With such information, therapists can work efficiently to highlight those transformations of information that unnecessarily place family members in conflict. In this process, therapists act as transitional attachment figures for family members, attuning their work to each family member's zone of proximal development. This enables therapists to progressively assist family members to discover implicit aspects of their experience, including those outside of conscious awareness. An especially auspicious aspect of DMM formulation is the recursive, systemic, and interpersonal process through which formulations emerge, suggest actions, and are modified by feedback. Thus, DMM formulations are emergent phenomena generated through a collaborative process of making meaning about safety and comfort among people who begin with different perspectives. Repeatedly enacting the process of learning from examined experience becomes a central outcome of therapy.

We propose that DMM FFFs provide a way to gather information, integrate it as a formulation, and test family-specific hypotheses regarding causation and change. DMM formulations aim to illuminate the causes of human distress and generate empirically sound means of reducing harm to the self and others. The examples given in this paper suggest the breadth of problems to which DMM formulation can be applied. DMM FFFs both reflect the complexity of individuals' life circumstances and also suggest the most advantageous timing and sequencing of potential treatment approaches. DMM formulations make symptoms meaning*ful*, thus offering self-respect to troubled people who have struggled with adversity too early in life and with too little protection and comfort. This is in contrast to treatment intended to reduce symptoms, which can inadvertently perpetuate family suffering, as in our examples of disruptive behavior problems and psychosis. Consequently, patients who do not benefit from treatment are not seen as being 'resistant', rather the emphasis turns to formulating the problem better and adapting treatment to fit each person's needs and development.

As enthusiastic as we are about DMM FFFs, they are not a panacea. They require more training, expertise, and precision than other forms of formulation. The training includes having more information about child development than most clinicians have and learning to deliver and interpret DMM assessments. Worryingly, the assessments can mislead if applied without expertise. One can hope that, through the treatment process, therapists would discover their errors, but this is not always the case. In addition, the DMM itself would benefit from more research. Nevertheless, the conceptual framework underlying DMM FFFs helps conscientious work by grounding clinical practice in a focused and coherent way, which can improve treatment success. Addressing the function of maladaptive behavior, how it was learned, and how it can be changed emphasizes strengths and generates hope. Doing this together in therapy creates a model of adapting that family members can use long after the close of treatment.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Informed Consent No single person formed the basis for the 4 case studies, but all the people in the anonymized composites signed informed consents as designated by the governing authority where they lived (in three different countries).

Research Involving Human Participants and/or Animals No research data are reported.

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