Defense Mechanisms and Implicit Emotion Regulation: A Comparison of a Psychodynamic Construct with One from Contemporary Neuroscience

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DEFENSE MECHANISMS AND IMPLICIT EMOTION REGULATION: A COMPARISON OF A PSYCHODYNAMIC CONSTRUCT WITH ONE FROM CONTEMPORARY NEUROSCIENCE

A growing interest in the neuroscience of emotion regulation, particularly the subfield of implicit emotion regulation, brings new opportunity for the psychodynamic treatment of neuropsychiatric disorders of childhood. At the same time, psychodynamic theorists have become more aware of the centrality of affects in mental life. This paper introduces a manualized psychodynamic approach called Regulation-Focused Dynamic Psychotherapy (RFP-C). Theoretically based on the domain construct of implicit emotion regulation (ER), this approach posits that contemporary affect-oriented conceptualizations of defense mechanisms are theoretically similar to the neuroscience construct of implicit emotion regulation. To illustrate this theoretical similarity, the literature connected with both concepts is reviewed. The implications of this idea, which could promote an interface between psychodynamics and contemporary academic psychiatry and psychology, are discussed.

Keywords: defense mechanisms, implicit emotion regulation, affects, oppositional defiant disorder, disruptive mood dysregulation disorder, disruptive disorders, externalizing disorders, psychodynamic psychotherapy, regulation-focused psychotherapy for children (RFP-C)

For several decades there has been a gap between psychodynamic and contemporary academic psychiatry and psychology. In

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academic clinical practice and research, an emphasis on explicit and cognitive processes has prevailed. Driven by the successes of cognitive psychologists in the definition of distinct cognitive processes and randomized controlled clinical trial data demonstrating its effectiveness (RCTs), cognitive-behavioral therapy (CBT) has become the dominant psychotherapeutic modality. Affect-oriented approaches to psychopathology, including contemporary internal conflict models of psychodynamic psychiatry and psychology (Brenner 2002), have been increasingly marginalized. A possible cause of this marginalization has been a lack of commitment by our field, until recently, to systematic empirical testing. As categorical diagnoses increasingly come to be defined by cognitive-behavioral models of psychopathology, psychodynamic psychiatry has diminishing relevance in contemporary models of care.

Fortunately, the gap between clinical psychodynamic approaches and systematic empirical approaches has been narrowed in recent years (Eagle and Wolitzky 2011). The growing empirical base now includes systematic work addressing empirical validation for the effectiveness of psychodynamic psychotherapy for children and adolescents (Midgley and Kennedy 2011).

We have developed a manual (Hoffman and Rice in press) for the treatment of children with externalizing disorders, including oppositional defiant disorder (ODD) and disruptive mood dysregulation disorder (DMDD). The dynamic approach described in the manual considers disruptive symptoms to be expressions of maladaptive emotion regulation (ER) or coping mechanisms (defenses) used by the child to protect him- or herself from painful emotions. Aggressive symptoms are understood to protect the child by masking and removing the painful emotions from the child's awareness. The painful feelings may include guilt, shame, hurt, and/or worry. In this treatment approach, the clinician systematically addresses the avoidance mechanisms with the child and talks about how the disruptive behavior helps the child avoid painful emotions. Eventually the clinician helps the child find better ways to cope with painful feelings.

This approach addresses the contemporary academic/psychodynamic gap by proposing that the psychodynamic construct of defense mechanisms, especially defenses against painful emotions, is similar to the construct of implicit ER processes in affective neuroscience. It is our aim here to explore the theoretical evidence in support of this idea. The

similarity of the two concepts (defense mechanisms and implicit ER) may help bring psychodynamic clinicians and neuroscientists together. The choice to organize a psychodynamic approach within the language of a Research Domain Criteria (RDoC) domain construct (Insel 2014) affords psychodynamic and psychoanalytic practitioners a place within the emerging future of academic psychiatry and psychology.

We will first present a clinical vignette to demonstrate the clinical RFP-C process. We will then delineate the theoretical similarities between the contemporary defense mechanism concept, especially as psychodynamic theory has developed its focus on affects,[1] and implicit emotion regulation concepts. We will conclude with a review of the characteristics of RFP-C that allow its application and testing in an academic setting to empirically demonstrate its ability to improve children's emotion regulation capacities.

CLINICAL VIGNETTE

A six-year-old girl was brought for an evaluation because of disruptive and negativistic behavior at home and school. While playing and chatting with the clinician, she threw a toy too close to the clinician's head (an example of the disruptive behavior the parents reported). The clinician said to her that they could play whatever she wanted in the sessions and she could say whatever she thinks or feels, but they can't let anyone get hurt. The clinician suggested that the girl throw the block in a different direction.

The girl immediately wanted to leave the playroom, spoke in a babyish tone and whiny voice, was angry with the clinician, turned over a chair very angrily and loudly, and started to go out to her mother (behavior similar to that reported by the parents). As she was starting to leave the playroom, she said she was angry with the clinician, using a much more infantile whiny voice, again like the behavior reported by the parents. The clinician said to her, "Gosh, you became so upset with me; it's hard for

[1]For our purposes here, we use the terms *affect* and *emotion* as synonyms (see Auchincloss and Samberg 2012). Panksepp and Pincus (2004) state that "we should reserve the term *affect* for the subjective experiential components of emotions and the term *emotion* for the superordinate category that includes [a variety of] components" (p. 198). Gross (2014a) views *affect* as an umbrella term for emotions, stress responses, and moods (p. 5).

you to hear me say 'no.' Does this happen often?" She said that at home when something happens that she doesn't like, she gets angry with her father; he then gets angry with her and a big fight starts. It is important to note that the clinician's focus was not on the girl's misbehavior but on her negative emotion (the anger with the clinician and her difficulty hearing the word "no."). The clinician focuses on behavior only if it is dangerous to the child, to the clinician, or to objects. The central problem was not that the child threw a toy but that there was an underlying painful emotion that she could manage only by misbehaving. This idea is discussed below when we describe empirically derived distinct dimensions within ODD that correlate more with emotional symptoms (i.e., irritability, touchiness, anger) than with behavioral symptoms (i.e., defying adults, annoying, blaming).

This vignette illustrates three central features of RFP-C: (1) By following the child's play and verbalization, the problematic symptoms that lead to disruption at home or school will inevitably be repeated with the clinician. (2) As in this situation, the clinician has the opportunity to observe directly the child's maladaptive behavior and the trigger for it (in this situation, the child's difficulty regulating her emotions when she hears the word "no"). (3) From the beginning of psychotherapeutic work, the clinician addresses the sequence of events with the child, stressing the child's difficulties coping with unpleasant emotions at the moment: "Gosh, you became so upset with me; it's hard for you to hear me say 'no.'" A goal of the treatment is to help the child find more adaptive emotion regulation mechanisms, such as avoiding explosions when faced with a "no," even if she feels angry and hurt. In this first session, the clinician addressed how the clinician's "no" was difficult for the child to hear, and asked about other similar situations: "Does this happen often?"

THE PSYCHODYNAMIC PERSPECTIVE ON DEFENSE MECHANISMS AND AFFECTS

Defense mechanisms have become a staple concept in general psychiatry and psychology (see, e.g., Perry and Bond 2012; Perry and Henry 2004). In DSM-IV defense mechanisms are described as "automatic psychological processes that protect the individual against anxiety and from the awareness of internal or external dangers or stressors. Individuals are

often unaware of these processes as they operate. Defense mechanisms mediate the individual's reaction to emotional conflicts and to internal and external stressors."

James Gross, who formulated the modern ER concept, states that Freud made anxiety regulation (Gross 2013; Gross 2014a) the focus of the structural theory and the goal of defense mechanisms. With the introduction of the construct of repression with Breuer (Freud 1893), defenses pervaded Freud's work. "The basis for repression itself," he wrote, "can only be a feeling of unpleasure," thus describing the affective basis for defenses. In "Project for a Scientific Psychology," Freud (1895) conceptualized a neuronal network as a generalized model of defense (Hentschel et al. 2004) that may be the forerunner of contemporary findings regarding the implicit ER system. In "Inhibitions, Symptoms and Anxieties," Freud (1926) wrote that repressive mechanisms are just one form of defense, making defense mechanisms the central concept in his theory of psychology.

Anna Freud (1936) developed the defense mechanism concept further through a systematic review of defenses. Additionally, she focused on the adaptive aims of defenses, rather than on psychopathology (Hentschel et al. 2004), which brings the defense mechanism concept into further compatibility with ER.

George Vaillant's work, to be reviewed below, extended Anna Freud's work through the development of a hierarchy of defense mechanisms and coping skills. This lent further plausibility to the idea that the two constructs are similar. Moreover, contemporary revisions of the internal conflict model (Brenner 1981, 1992, 1994, 2002) further suggest the similarity between implicit ER and unconscious defense mechanisms.

Since the seminal work of Berta Bornstein, child and adolescent psychoanalysts have stressed the importance of addressing a child's defenses against unpleasant emotions (Hoffman in press; Bornstein 1945, 1949, 1951). Yet this idea seems to have been less central in psychotherapeutic work with adults.

Kernberg (2012) has proposed that affects are a primary motivating system and that integration between psychoanalytic affect theory and neuroscience is possible. Lotterman (2012), in his review of the analytic literature, has found very few references to how and when to address affects in the clinical situation. He notes that, in contrast to ideas and fantasies, affect "is an especially good marker of the workable psychic

surface. Affect is part of a very early signaling system that alerts the individual and others about the status of the self. It is a rapid response and a largely automatic reaction that is only partially controlled by the ego and its defenses. Affects by their very presence mark the fact that a certain mental element has become significant to the self; therefore, affect can be a particularly consistent and helpful barometer of what is currently on the patient's mind" (p. 330).

THE CENTRALITY OF AFFECT IN NEUROSCIENCE

Recent developments in general psychiatry and psychology, particularly in child psychiatry, have begun to stress the importance of affects in both normality and pathology, turning from a sole focus on cognition to the centrality of addressing emotions in the treatment of patients. As the affective neurosciences and empirical psychiatric research have advanced, the importance of affect in psychopathology is reemerging. Oppositional defiant disorder (ODD), for example, long understood strictly as a disorder of disturbed behavior and treated with parental behavior management training (PMT; Steiner and Remsing 2007), has now been reconsidered in DSM-V to emphasize its affective components. This came as a result of several studies that found that distinct dimensions within ODD correlate with emotional (e.g., irritable, touchy, angry) rather than behavioral (e.g., defying, annoying, blaming) dimensions of the disorder (Stringaris and Goodman 2009; Burke 2012; Drabick and Gadow 2012; Whelan et al. 2013; Rowe et al. 2010). The addition of DMDD to DSM-V and the recent discussion of difficulties in emotional regulation in individuals with attention deficit hyperactivity disorder (ADHD) (Shaw et al. 2014) are further examples of a theoretical shift highlighting the emotional underpinnings of behavioral disruptions. In fact, a recent factor analysis suggests that the core deficit in ODD may be one of emotion dysregulation (Cavanagh et al. 2014).

Yet contemporary mainstream treatments do not directly target the disruptive emotionality of childhood neuropsychiatric disorders. In the case of DMDD, no clear treatment exists. The clinical perspective described in our RFP-C manual and theoretically supported here suggests that the traditional focus of psychodynamic practitioners on affects and defenses against unpleasant affects may be of renewed value to the general mental health community in addressing these common disorders.

EMOTION REGULATION AND THE DIMENSIONAL PERSPECTIVE

The current shift in interest toward classifying psychopathology based on dimensions of observable behavior and their correlated neurobiological measures (Insel 2014) brings new opportunity for affect-oriented approaches. The pathway presents through the study of the neurobehaviorally defined concept of emotion regulation (Gross 2014b). ER may be defined as the capacity to shape which emotions one has, when one has them, and how one experiences or expresses them (Gross 2014b). ER capacities are expressed as operationalized observable cognitive processes that exist on a dimensional spectrum; that is, they include effortful processes of self-protection in which both healthy and clinical populations engage. Examples include effortful distraction from painful ideas, cognitive reappraisal, and the approach of negative ideas from a different, more positive perspective. Functional MRI studies have identified the neural correlates of the processes of this system. Consequently, psychosocial treatments that target these processes and demonstrate change in their neural correlates have been developed and tested in lieu of those targeting strictly heterogeneous categorical diagnoses.

A crucial distinction in the ER literature has been made recently between explicit and implicit ER processes (Gyurak, Gross, and Etkin 2011). With the introduction and emphasis of the implicit ER concept—it now has its own chapter in the most recent edition of Gross's *Handbook of Emotion Regulation* (2014b)—the field has expanded immensely.

Gross recognizes in his introduction to the handbook, as well as in a recent review of the field (Gross 2013), that the study of ER essentially dates back to Freud himself (1926). This new focus on implicit ER processes is the most direct contemporary scientific link in this chain and has led us to propose that implicit ER processes and defense mechanisms may be similar constructs.

A CONJECTURE

Explicit ER mechanisms are deliberate or effortful conscious cognitive manipulations that monitor, adjust, and select emotional and/or behavioral responses from a range of options. The neurobiology of this system has been well studied (Ochsner and Gross 2014). Explicit ER is dependent on

the dorsal anterior cingulate cortex and dorsolateral PFC. These two divisions of the cerebral cortex modulate lower brain structures, including the amygdala, the hypothalamus, and brain stem nuclei, through their respective regulative pathways. Successful modulation of these visceromotor centers through the PFC regulators leads to increased vagal tone and decreased sympathetic arousal. This results in a measurable neurochemical state that promotes calmness and inhibits behavioral dysregulation.

Conscious, effortful cognitive-behavioral strategies that have been investigated include cognitive reappraisal (McRae et al. 2010; Goldin et al. 2008; Ochsner et al. 2002), suppression (Goldin et al. 2008; Dunn et al. 2009), and effortful distraction (Van Dillen and Koole 2007). In fMRI studies these processes have demonstrated a hierarchy of effectiveness in the attenuation of limbic, hormonal, and sympathetic autonomic activity through midline prefrontal control in response to painful emotions (Goldin et al. 2008).

DEFENSE MECHANISMS AND IMPLICIT EMOTION REGULATION

In many ways, explicit ER processes are more similar to conscious coping mechanisms than to unconscious defense mechanisms. These explicit processes entail an emotional adaptation that allows one to work consciously toward achieving an emotional goal. It is worth noting here the dynamically focused work of George Vaillant. Vaillant (1971; Vaillant, Bond, and Vaillant 1986) advanced a hierarchical model of defenses of increasing effectiveness that integrated conscious coping activities with the more traditional unconscious defenses (Vaillant 1993). In addition to Vaillant's efforts, work by authors including Perry (Perry and Kardos 1995) and Hilsenroth (2002) led to the elaboration and inclusion of the Defensive Functioning Scale (DFS) in DSM-IV, an instrument that lists "Defense mechanisms (or coping styles)" and presents a hierarchy of their effectiveness.

The increasing interest today in investigating the automatic, implicit mechanisms of ER (Etkin et al. 2010) brings neuroscience and psychodynamics even closer together. Implicit ER includes external influences and self-evaluations, together with immediate response tendencies. It is dependent on the ventral prefrontal cortex (PFC) (in contrast to the activities of the dorsolateral PFC in explicit ER), which includes the orbitofrontal cortex, ventromedial PFC, and ventral anterior cingulate cortex (Gyurak and Etkin 2014).

There is evidence that these mechanisms may be even more important to healthy mental functioning than explicit cognitive-behavioral techniques are (Gyurak, Gross, and Etkin 2011), as they are employed automatically and do not require conscious triggering, effort, or monitoring. Deficits in implicit ER, rather than in explicit ER, may be more accountable for psychopathology, including anxiety disorders (Etkin et al. 2010) and mood disorders (Ehring et al. 2010). These findings are similar to the psychodynamic understanding that unconscious defenses are crucial to healthy mental functioning, and that disturbances in them play an important role in psychopathology.

Implicit emotion regulation has been defined as "any process that operates without the need for conscious supervision or explicit intentions, and which is aimed at modifying the quality, intensity, or duration of an emotional response. Implicit ER regulation can thus be instigated even when people do not realize that they are engaging in any form of emotion regulation and when people have no conscious intention of regulating their emotions" (Koole and Rothermund 2011, p. 390). Note the similarity of this definition to the definition of defense mechanisms in DSM-IV (see above).

Emotion regulation develops early in infancy (Kopp and Neufeld 2003). Before the age of three months children are restricted to either turning toward or turning away from stimuli in their attempts to self-regulate. But by three months they begin to self-soothe through thumb sucking, crawling away, or reflexive social signaling via crying. This culminates by age six months in the ability to self-distract through focusing attention on neutral objects in lieu of distressing stimuli.

Successful regulation requires extrinsic influence through flexible and supportive parental interactions (Calkins and Hill 2009). The toddler years mark the initiation of the organization of neural connectivity required for emotion regulation, in particular prefrontal-limbic organization as described above (Lewis et al. 2006; Rothbart et al. 2011). Thereafter, toddlers learn a variety of specific strategies to manage affective states.

We suggest, using the language of psychodynamic theory, that here a diversity of defense mechanisms is born. This developmental perspective on defenses has been systematically elaborated by Cramer (2006), who stresses the importance of denial in early childhood and the subsequent development of alternatives. Cramer's work started from the work of Piaget, whose early work attempted to integrate the process of childhood development, from egocentric thought to the use of defense mechanisms (Elkind 1976). Cramer

focuses on a sequence, from physical to mental development, in which defenses spring from the child's understanding and incorporation of basic innate motor reflexes (Piaget 1952). For example, the closing of a child's eyes, the earliest of the reflexes, becomes a mental operation expressing the defense of denial. Cramer's work exemplifies how neurophysiological givens in children serve as a basis for the development of psychological mechanisms to cope with stressful conditions. Her systematic research indeed shows that the defense of denial predominates in early childhood; later, projection- and identification-oriented defenses become prominent, in the grade school years and in adolescence, respectively.

Cramer's work is similar to that being reported in the ER literature. It would be of value to examine whether neural signatures show emerging prefrontal-limbic activity replacing a parietally mediated activation and deactivation attention network as the child moves from denial to the use of projection and identification.

Work in both the affective neurosciences and psychodynamics, then, shows parallels in the conceptions of the processes labeled "implicit emotion regulation" and "defense mechanisms." This lends credence to the idea that implicit ER processes may be similar to the psychodynamic concept of defense mechanisms, particularly defenses against unpleasant emotions.

If the similarity between ER and defense mechanisms can be further substantiated, it may expand the interface between clinical child and adolescent psychotherapeutic work (Hoffman in press) and the findings of affective neuroscience and empirical work in psychiatry.

TREATMENT IMPLICATIONS

At a time when mainstream treatments do not address the disrupted emotionality of childhood disorders, and when there is increasing concern regarding the widespread use of antipsychotic medication in children with ODD (Olfson et al. 2012), this initial conjecture can lead to a new line of exploration into treatment of the neuropsychiatric disorders of childhood. Of particular importance is the new diagnosis of DMDD, given the absence of clearly indicated treatments for this disabling disorder. The advancement of a treatment modeled on neurobehavioral dimensional measures is in line with the objectives of the RDoC initiative of the National Institute of Mental Health (Insel 2014). It offers an opportunity to tailor and implement a therapeutic approach to disruptive children that

is targeted to the underlying disruption of their implicit ER capacity rather than simply using explicit cognitive techniques focusing on the maladaptive behavior and parental responses to it.

Children's ER capacities, and even the typology of the emotion regulation skills they habitually employ, can be reliably measured (Garnefski et al. 2007; Gullone and Taffe 2012; Gross and John 2003). RFP-C is a short-term treatment, with integrated adherence measures, that is manualized for use by graduate-level trainees; it is designed to be reliably employed in academic settings. The aim is to demonstrate the treatment's ability to improve ER capacities in children.

DISCUSSION

Our manualized treatment (RFP-C) can be conceptualized either as addressing the child's defenses against unpleasant emotions or as attempting to help the child develop implicit ER systems. The treatment works through an integrative therapeutic approach that combines elements of behavioral therapy (e.g., limiting dangerous behavior in the therapy room) with elements traditionally called psychodynamic (e.g., allowing the child to lead the play or discussion in order to understand the meaning of the child's symptoms and behavior). To accomplish this it is useful to determine (1) what emotions the child is avoiding; (2) how they are being avoided; and (3) why they are being avoided maladaptively.

In the vignette we have presented, one can see that the girl experienced a negative emotional response (to the "no") that had to be avoided. She masked that emotional-response-to-be-avoided by becoming angry at the clinician and wanting to leave him (a maladaptive response); our goal in the treatment is to understand why that original emotion had to be avoided so dramatically, so that we may then help the child find more adaptive ER devices.

CONCLUSION

We have presented arguments supporting the conjecture that the concept of implicit emotion regulation is similar to that of defense mechanisms. If this similarity proves to be valid, it can promote the integration of two fields that appear quite disparate, the affective neurosciences and psychodynamic psychiatry and psychology. The emerging clinical interest in affect seen today in psychiatry and psychology, particularly child

psychiatry, offers an opportunity for the scientific use of psychodynamic interventions by practitioners. After decades in which the psychodynamic perspective has by and large been excluded from mainstream mental health services, that is indeed salutary.

There are few established treatment approaches for disruptive children, particularly those diagnosed with DMDD. We intend our efforts here as a first step toward developing a valid approach to the affective imbalances of DMDD using psychodynamic techniques. Our reliance on the emerging RDoC model offers fresh opportunities for consideration and study. The systematic testing of hypotheses will be required before any definitive statements can be made.

The treatment manual we have written presents a systematic approach to disruptive children with diagnoses such as ODD and DMDD; using this approach, the clinician carefully addresses the child's unpleasant emotions and the defenses (e.g., denial and projection) deployed against them. Iterative application of these procedures promotes the maturation of ER capacities in these children, encouraging improved self-esteem and self-mastery.

In time, starting from this model's hypotheses (and using brain-based dimensional measures of observable behavior with defined neural correlates), electroencephalographic or fMRI studies may be designed to determine the impact of systematically addressing children's defenses against painful affect. The question is whether these children operate with, and resolve deficits within, the implicit ER system described by neuroscientists. Our efforts here are meant to lay the conceptual foundation for such work to proceed.

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