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Maternal reflexive functions and parent training in children with oppositional defiant disorder.

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Abstract

Oppositional Defiant Disorder (ODD) is one of the most common neuropsychiatric disorders in preschool children. Parental self-regulation is critical for maintaining positive parenting practices. However, to the best of our knowledge, existing parental trainings for ODD do not focus on the enhancement of parental reflective functions. In the present study, we compare two models of behavioral Parent Training (PT) for duration of six months: one, already consolidated, is based on the principles of Applied Behavioral Analysis (ABA), the other, innovative, integrates with the model of the regulatory and reflective parental function of Fonagy. Outcomes revealed that the innovative training was more effective as compared to the ABA training shopping that an improvement into the ability of parents to imagine the subjective experience of their developing children increases the development of children's self-regulation.

Keywords: Oppositional defiant disorder, Reflexive functions, Parent training, Mentalization, Emotion regulation, Emotional development, Externalizing problems.

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Introduction

Oppositional Defiant Disorder (ODD) is characterized by behavioral patterns of persistent anger, irritability, and highly angry mood, resentful and vengeful behaviors [1]. Such externalizing behaviors, including strong intolerance and opposition to rules, have a negative impact on academic and work performance throughout life as well as on family, friends, teachers and society [2,3]. These provocative behaviors predispose children to risk of developing learning, mood and anxiety, substance abuse, and alcoholism disorders in the future up to an antisocial personality disorder ODD is often caused by exposure to negative parenting practices, family conflicts and poor family cohesion [4-13].

Furthermore, early childhood aggression, often present in ODD, is associated with less adaptive social skills and greater social difficulties, such as peer rejection, during the school-age years [14]. Several studies have shown that parents of children diagnosed with ODD are more critical, cold and rejecting, and have less favorable parenting styles [15-17]. Furthermore, harsh and ineffective parenting, including forms of rejection of children's emotional distress, is linked to an increase in oppositional symptoms [18,19]. It has therefore been shown that strong exposure to negative factors of the parent-child relationship predisposes children to greater risk of oppositional problems [20].

Alternatively, warm and responsive parenting is considered a protective factor in children's development, though even among those affected by ODD [21,22]. Several researches highlight how a poor regulation of emotions of child is associated with externalizing problems of the child's behavior, both in the school and family context, while an excessive inhibition in the regulation of emotions is related to internalizing problems and social anxiety [23]. Parenting is an emotionally demanding endeavor, which can be particularly challenging for parents struggling with psychopathology and lacking good regulation skills. Jenkins and colleagues state that a lack of awareness of one's emotions could be at the basis of the emotional dysregulation trait [24].

Children of parents with significant emotional dysregulation, such as explosive anger or social and emotional withdrawal are at increased risk of developing psychological disorders and exhibiting behavioral, social and educational difficulties, especially at school age [25]. Parental self-regulation is critical for maintaining positive, educational and non-abusive parenting practices that ensure healthy development in children [26,22]. Effective and positive parenting can affect children and their own regulation skills [26-28]. In contrast, tough parenting is associated with poor inhibitory control, externalizing problems and other harmful outcomes in children [29-31].

Parental suitability is also assessed through the Fonagy criterion of reflexivity which refers to that set of psychological processes underlying the ability to mentalize or the so called theory of mind tom, also understood as abstraction and reflective awareness, which plays a central role in the development cognitive and developmental of the child [32,33]. Fonagy and colleagues validated the first self-report that measures the parental Reflective Functioning (RF), the

Reflective Functioning Questionnaire (RFQ) stated that mentalization skills develop as a function of the parent's habitual comprehension and regulation of the child's internal state from the child's point of view.

Based on Fonagy's work, Slade also formally introduced the concept of Parental RF to include the ability of parents to mentalize about themselves and their child [34,35]. Regarding the modalities of intervention, there are several studies that have investigated types of treatment based on evidence that have been shown to be effective in reducing the behaviors associated with ODD however, the behavioral treatments cited in the various studies do not take into account the role of parental reflexive functions and, to the best of our knowledge, there are no studies in the literature that integrate behavioral treatments with the enhancement of reflexive functions [36].

Therefore, in order to improve the behavioral difficulties of children, in the present study we decided to compare two models of behavioral Parent Training (PT) for duration of six months: one, already consolidated, is based on the principles of Applied Behavioral Analysis (ABA), the other, innovative, integrates with of the regulatory and reflective parental function [34]. The objective of this study is to verify that improving the perception of oneself as a parent by favoring the development of conscious parenting can favor a more competent emotional development in the child with ODD and reduce the externalizing behaviors typical of the disorder itself, and verify whether the skills acquired are still in place six months after the treatment.

Subjects and Methods

Participants

The sample consisted of 100 children, aged between 5 and 6 years, who had been diagnosed with Oppositional Defiant Disorder (ODD) following the administration of K-SADS-PL DSM-5 to parents. In addition, the parents were administered the RFQ questionnairewhich showed in the parents a low perception of themselves, of the child's mental states and absent reflexive functions, and high indices of parental stress that emerged following the administration of the PSI/SF test [34,37,38].

The presence of the externalizing disorder was confirmed through the administration of CBCL 1½-5 to parents and teachers; the administration of K-SADS-PL DSM-5 also allowed the exclusion of other childhood neuropsychiatric pathologies [37]. We also administered the Raven Matrices (Raven, 2008) to ensure that the Intelligence Quotient (IQ) was normal range. The inclusion criteria were: a) Normal cognitive functioning (≥ 90°) assessed through the administration of Raven's Colored Matrices, b) Absence of other childhood neuropsychiatric disorders confirmed by the administration of K-SADS-PL DSM-5, c) Absence of neuropsychiatric pathologies in the parents, d) Middle-upper socio-cultural class of the parents.

The sample was divided into two groups based on the type of PT administered to the parents, as will be discussed in the next paragraph. Group 1 (Gr1) was composed of 50 subjects (20 male and 5 female) with a mean age of 5.73 (SD 0.34); the group (Gr2) consisted of 50 subjects (18 male and 7 female) with a mean age of 5.84 (SD 0.42). We also assessed the socio-economic status through the administration of the Scala for the assessment of Socio-Economic Status (SES) to parents to ensure that the two groups were homogeneous within their social background [38]. The Gr1 had a score of 6.3 (SD=0.6) whilethe Gr2 had a score of 6.5 (SD=0.3). The data was collected by licensed psychologists at the FINDS developmental psychology clinic in collaboration with the University of International Studies of Rome (UNINT) and the University of Campania "Luigi Vanvitelli".

Instruments

The Protocol used consists of the following tests: Raven matrices (Raven JC, 2008), K-SADS-PL DSM-5, PSI/SF, RFQ, CBCL, SES [38-40].

Raven matrices Colored Progressive Matrices (CPM): Raven's progressive matrices measure non-verbal intelligence over the time span from infancy to maturity. In particular, this test allows measuring and evaluating the fluid intelligence and freeing from culture and the skills of knowledge, production and processing of information, typically of a linguistic nature and linked to culture (crystallized intelligence). This test has only matrices A and B present in the standard test with an Additional Test (AB) of 12 elements. Each object requires you to complete a series of figures with the missing one, compared to a model presented, according to a criterion of increasing difficulty.

K-SADS-PL DSM 5

It is a diagnostic interview for the evaluation of psychopathological disorders (past and present) in children and adolescents according to the criteria of the DSM-5. In particular, it allows identifying the presence of: mood disorders, psychotic disorders, anxiety disorders, attention deficit disorders and disruptive behavior, substance abuse.

RFQ

It evaluates the level of mentalization possessed through two subscales which evaluate the certainty (RFQ_C) and the uncertainty (RFQ_U) about the mental states of oneself and others. Higher scores on these subscales indicate two distinct RF disorders, respectively, hypomentalization and hypermentalization: Hypomentalization reflects concrete thinking and poor understanding of the mental states of oneself and others, while hypermentalization describes the attitude aimed at identifying too certain and detailed models of the mind and mental states not supported by evidence.

PSI/SF

A self-assessment questionnaire used for the identification of parental stress and for the early identification of factors that can compromise the normal development of the child. The tool is based on the hypothesis that the stress experienced by a parent is the joint result of certain characteristics of the child, characteristics of the parent himself and of a series of situations closely related to parenting. In the short form it consists of 36 items, divided into three subscales: Parental Distress or Parental Distress (PD) which analyzes the level of stress that a parent experiences, deriving from an altered perception of their parenthood; Parent-Child Dysfunctional Interaction or Dysfunctional Parent-Child Interaction (PCDI), focused on the fact that the parents perceive the child as not responding to their expectations and the interactions, therefore, neither reinforce parental perception; the Child Difficult or Child Difficult (CD) analyzes some behavioral characteristics of the child that originate in his/her temperament making him/her manageable or not; Finally, it is possible to calculate a Defensive Response score (DR) and the Global Stress Index (GSI).

CBCL

It is an interview structured around 8 syndromic scales: Anxiety/depression, withdrawal/depression, somatic complaints, social disorders, thought disorders, attention disorders, rule-breaking behavior, aggressive behavior, which are all grouped into two other general dimensions: internalizing and externalizing disorders. The 2001 version therefore makes it possible to evaluate behavior through scales, which partly replicate the diagnostic criteria of DSM 5, and which, in the Italian standardization used, result structured in: affective disorders, anxiety disorders, somatic disorders, attention and hyperactivity disorders, oppositional - provocative disorders and conduct disorders.

SES

Self-administered questionnaire that allows collecting information about the level of education and professional level of the parents, and indicates the position of the person or family within the social system.

Procedures

After confirming the diagnosis (K-SADS-PL DSM-5 and CBCL) and collecting information on reflexive functions and parental stress (PSI/SF and RFQ), we began the PT intervention among the mothers. The PT aims to modify the relational style and attitudes that negatively affect children's behaviors: parents learn to effectively deal with many common problems that, in the long run, can compromise not only the family well-being but the psychological development of the child [41]. The intervention totally lasted six months and was conducted four times a month for a total of 24 meetings. Each meeting lasted one hour and was held individually and not in a group.

The sample of 100 families was divided into two groups of 50 based on the PT model used to support parental couples. In particular, the gr1 performed a behavioral PT together with an enhancement of the maternal reflexive functions, in which the parents are guided and directly involved by a therapist to improve the relationship with their child. The basic assumption is to aim for work that enhances the reflective function of the mothers; we expected that such enhancement of parental/ maternal RF allows the correction of atypical behavioral patterns and the coherent development of a self-image parental.

The Gr2 performed a behavioral PT aimed at adopting effective educational methods and gaining awareness of behavioral problems to improve their management. At the end of the six months of treatment (T1), we re-administered the PSI/SF and RFQ questionnaires to the mothers and the CBCL questionnaire only to the teachers of the children of both groups individually, with the purpose to identify any improvements following the treatment.

Results

Data analyzes were performed using SPSS 26.0 statistical survey software. Significance was accepted at the 5% level ($\alpha<0.05$).We then compared groups (1 and 2) at T0 and T1 to assess whether there were improvements after treatment (within-time variable) and then compared both groups at T1 (between-group variable) to see which of the two. Didactic interventions were more effective.

We therefore performed a mixed two-way 2 × 2 Multivariate Analysis of Variance (MANOVA) within-group factor=time (T0 and T1) and between-group factor=group (group 1 and group 2).We then analyzed the two independent variables (time and group) and the three dependent variables (test RFQ, PSI and CBCL). This analysis highlighted the following results:

Regarding the RFQ test, the following results were highlighted: the factor within (time) is significant ($F(1,98)=921.988$, $p<0.05$). This data indicates that there has been a change over time; it is highlighted how the behavioral PT focused on the enhancement of the reflexive functions was more effective, while there is no improvement of the parental reflexive functions in the Gr2 that had performed a traditional behavioral PT (Table 1);

T0		T1		F	p
Means	SD	Means	SD		
8.3	1.09	11.48	2.89	921.988	921.988

Table 1. Effect of the within factor on the RFQ test.

The between factor (group) is significant ($F(1,98)=354.881$, $p<0.05$). This data shows us that there is a difference between group 1 and group 2; therefore there is a significant difference between the two interventions, more specifically there is a greater efficacy with the behavioral PT focused on enhancing reflexive functions, while no changes are highlighted in the GR2 that had performed a traditional behavioral PT (gr1) (Table 2).

Group 1		Group 2		F	p
Means	**SD**	**Means**	**SD**		
11.09	11.09	8.69	1.22	354.881	<0.05*

Table 2. Effect of between (group) factors on RFQ test.

Time * group interaction is significant (F (1,98)=684.843, p<0.05). This data indicates that there is a significant interaction between the time and the type of treatment. More specifically, the PT of GR1 was found to be more effective than GR2; on the other hand, there is no improvement in parental reflexive functions in GR2 that had performed a traditional behavioral PT (Table 3 and Figure 1).

Time	Group 1		Group 2		F	p
	Means	SD	Means	SD		
T0	8.13	1.09	8.47	1.08		
T1	14.06	1.29	8.91	1.31	684.843	<0.05*

Table 3. Effect of the time. *: Group interaction on the RFQ test.

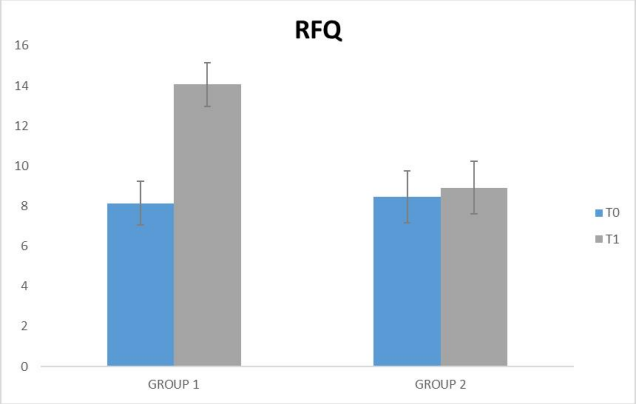

Figure 1. Comparison of the two groups between the T0 and T1 at the RFQ test.

Regarding the PSI test, the following results were highlighted: Scale * time * group interaction is significant (F (3,294)=50.464, p<0.05). This data indicates that there is a significant interaction between the four subscales, time and type of treatment. More specifically, in Gr1 there are significant improvements to T1, especially to the CD and PD subscale, compared to Gr2. These data indicate that in Gr1 the parental stress and difficult behaviors of the child are significantly reduced, and also improves the perception of the parental self with a positive impact on the quality of the parent-child relationship (Table 4 and Figure 2).

Group	PSI	Time	Means	SD	F	p
1	DR	T0	12.52	1.53		
		T1	6.38	1.52		
	PD	T0	43.64	3.74		
		T1	26.26	2.38		
	PCDI	T0	32.2	1.86		
		T1	20.4	1.96		
	CD	T0	46.82	1.68		
		T1	28.52	2.69		
2	DR	T0	12.9	1.18		
		T1	12.1	1.14		
	PD	T0	44.58	2.9		
		T1	39.92	2.54		
	PCDI	T0	32.98	1.42		
		T1	30.54	1.19		
	CD	T0	47.02	1.87		
		T1	42.7	1.55	50.464	<0.05*

Table 4. Effect of scale. *: Time, *: Group interaction in PSI tests.

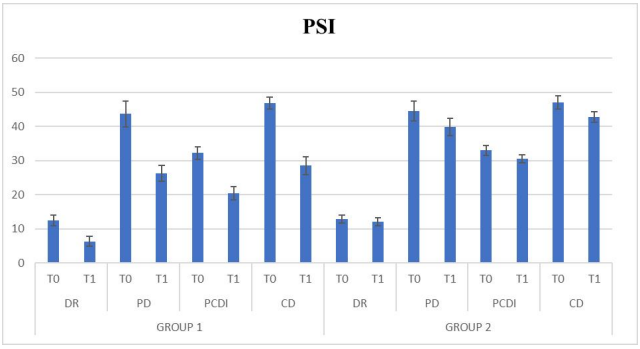

Figure 2. Effect of the scale. *: Time, *: Group interaction on the PSI test.

As regards the CBCL test, the following results were highlighted: The factor within (time) is significant (F (1,98)=522.638, p<0.05). This data indicates that there has been a change over time; therefore it is highlighted how the behavioral PT focused on the enhancement of reflexive functions (Gr1) was more effective in reducing the externalizing behaviors of children (Table 5).

T0		T1		F	p
Means	**SD**	**Means**	**SD**		
34.08	10.23	25.85	8.33	522.638	<0.05*

Table 5. Effect of within factor on CBCL test.

The between factor (group) is significant (F (1,98)=845.593, p<0.05). This data shows us that there is a difference between Gr1 and Gr2; therefore, there is a significant difference between the two interventions, more specifically there is a greater efficacy with the PT focused on enhancing the reflexive functions (Gr1) on the externalizing symptoms of children (Table 6)

Group 1		Group 2		F	p
Means	SD	Means	SD		
27.09	8.79	32.84	10.05	845.593	<0.05*

Table 6. Effect of between factors (group) on CBCL test.

Time * group interaction is significant (F (1,98)=1276.990, p<0.05). This data indicates that there is a significant interaction between the time and the type of treatment. More specifically, the PT of gr1 was found to be more effective in reducing externalizing symptoms than Gr2 (Table 7 and Figure 3).

Time	Group 1		Group 2		F	p
	Means	SD	Means	SD		
T0	33.79	10.43	34.37	10.08		
T1	20.39	5.53	31.31	10.04	1276.99	<0.05*

Table 7. Effect of the time. *: Group interaction on the CBCL test.

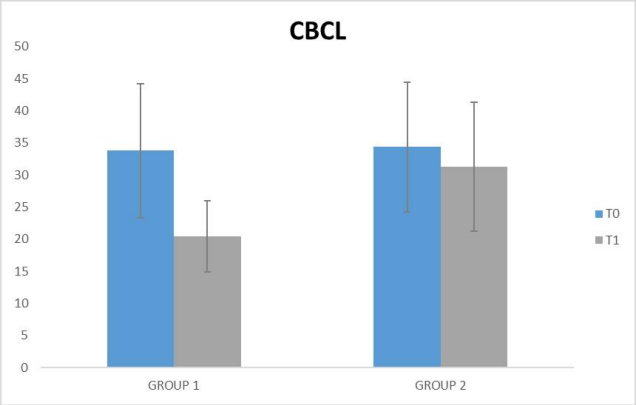

Figure 3. Comparison of the two groups between T0 and T1 on the CBCL test.

Discussion

The present study aims to highlight whether a PT focused on the enhancement of reflexive functions can be more effective in intervening on parents of children with ODD compared to a traditional PT (behavioral based on the ABA model) and if the skills acquired are still in place at six months after treatment. Previous studies have proposed various treatments to improve the behavioral symptoms of ODD; among these, Parent Management Training (PMT) has been implemented by several authors and which aim is to lead to a decrease in disruptive behaviors and an increase in compliance with the child. PMT has also led to a significant decrease in parental stress and parental dysfunction, which are important factors contributing to healthier parent-child relationships [42].

However, the effects of treatment wear off once treatment is stopped and there is some evidence that older youth and adolescents may not easily benefit from such treatment [43]. Other authors have proposed the Collaborative and Proactive Solutions training (CPS), which instead focuses on helping parents and children too collaboratively and proactively solve behavioral problems [44]. CPS demonstrated, through a large randomized clinical trial, a comparable efficacy to PMT, resulting in significant reductions in aggressive and oppositional behaviors. In a second randomized clinical trial, CPS was shown to improve the quality of parent-child relationships, reduce parenting stress and problematic behaviors manifested at home and there has been some suggestion that the effects of CPS were longer lasting than PMT [45]. Although various types of PT exist for the treatment of this disorder, to the best of our knowledge there are no studies evaluating parental reflexive functions as a possible treatment or as a complementary treatment to already consolidated behavioral interventions therefore this aspect constitutes the innovative element of the present study [46]. The results show that the group of children whose parents underwent the PT oriented to the enhancement of maternal reflexive functions (Gr1) had an improvement, at the post test (T1), of reflexive functions (*i.e.* awareness of mental states of self and others) as evidenced by the scores emerged from the RFQ test.

We believe that these results are consistent with the existing literature which demonstrates that parental reflexive functions, particularly maternal ones are a protection factor in the parent-child relationship and also become a precursor ofhealthy development. In fact, Fonagy stated that high levels of awareness of Reflective Functions (RF) can guarantee improvements in the regulation of affects and the development and maintenance of a strong sense of self as well as constructive social interactions in children [47]. It is also believed that the ability to be reflective is essential for the development of social skills and for the development of mentalizing skills suggested that awareness of mental states develops in the context of early attachment relationships in which children learn to identify and reflect their affects through the observation of their parents' responsiveness to their subjective experience. Infact, it has been shown that the ability of parents to imagine the subjective experience of their developing children accelerates the development of children's self-regulation, together with the representation and communication of affects [48].

In addition, the results revealed significant reductions in parental stress (PD index) for the scores that emerged from re-administration of the PSI test at T1. Furthermore, the reduction of parental stress has improved the relationship with the child, who, by becoming more responsive, has also improved the behavioral aspects. These aspects are highlighted by the significance of the scores on the PCDI and CD indices at T1. The scores on the DR index at T1 were also significant, showing a more positive image of the parental self [49]. Finally, with regard to the CBCL test, the scores that emerged at T1 were significant, indicating a significant reduction in the externalizing behaviors of children compared to the start of treatment. In Group 2, on the other hand, no significant results were highlighted at the post-test, thus noting that the externalizing symptoms persist without evident improvements. In addition, the maternal reflexive functions did not improve (evidenced by the non-significance of the scores at T1 of the

RFQ test), neither the perception of parental stress (evidenced by the non-significance of the scores at T1 of the PSI test) [50]. This study shows that enhancing maternal reflexive functions can improve the parental image and, consequently, the parent-child relationship, thus reducing the typical externalizing symptoms of ODD In particular, since ODD is characterized by behavioral patterns of persistent anger, irritability and choleric mood, the importance of intervening on the regulation of emotions and awareness of these is evident, particularly in parents since they constitute a developmental model for children (cite literature on imitation) [52,53]. Indeed, some studies have shown that parents of children diagnosed with ODD are more critical, cold and rejecting thus showing a tendency to the dysregulation of emotions linked to a deficient reflexive function. Furthermore, emotional dysregulation in parents and poor reflexive function also lead to negative parenting practices, family conflicts and poor family cohesion, all factors that result in concomitance with ODD and trigger a series of emotional and relational problems [54-57].

Conclusion and Limits

This study proposes innovative results with respect to the treatment of children with ODD, in particular the proposal of an integrated behavioral PT that includes the enhancement of maternal reflexive functions. In fact, our outcomes have highlighted that it seems possible to improve the regulatory and reflexive function of the child only if provided for training to strengthen the parental reflexive function. We do not know if these improvements can be maintained over six months, therefore it would be useful to carry out a follow-up after one year to verify the maintenance of the skills acquired and to expand the sample in order to allow a generalization of the data. In addition, a sample population with a different age (adolescents for example) could be considered to verify the validity of such interventions in other developmental periods or to note that, as the child progresses, it would be appropriate to focus alternative and more specific intervention plans.

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