1981

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Abstract

A total of thiry-one emotionally disturbed children participated in the study to test whether impulsive children have higher anger arousal as a response to provocation than the reflective children. Twenty-two children were classified as impulsive (n=11) or reflective (n=11) on the basis of their error and latency scores on the Matching Familiar Figures Test(MFFT). The two groups of children were compared on their self-reported anger arousal in response to conflict situations (Children's Inventory of Anger). Impulsives and reflectives did not differ significantly on their self-reported anger arousal on the total Children's Inventory of Anger score. Therefore, the hypothesis was not supported. Possible explanations are discussed.

# Impulsive Cognitive Style and Self-Reported Anger Arousal In Emotionally Disturbed Children

Reflection-impulsivity is the cognitive dimension used to describe difference in children's resolution to response uncertainty. When presented a problem in which uncertainty exists as to the correct response, impulsive children tend to respond quickly without considering the available alternatives carefully and consequently make many mistakes. Reflective children consider the alternatives carefully and withhold responding until they have a high probability of being correct, and consequently make few mistakes. The most frequently employed instrument to assess cognitive reflection-impulsivity is Kagan's (7) 12-item Matching Familiar Figures Test (MFFT). The MFFT is a match-to-sample perceptual recognition task in which the child is shown a single picture of a familiar object and is instructed to select from an array of six variants one picture identical to the standard. On each of the test's twelve items, errors and response latency time are recorded to identify the degree of conceptual reflection-impulsivity. In order to classify children as impulsive or reflective, a group of children must be tested on the MFFT. Typically, if the child's mean latency is above the group mean and his total errors are below the group mean, he is designated reflective. If the child's mean latency is below the group mean and his errors are above the group mean, he is designated impulsive.

A number of studies, using the MFFT, have examined the

relationship between cognitive impulsivity and impulsive behavior. In general, the research results indicated some positive relationship between the two.

Teacher rating scales and parent rating scales both showed a positive relationship between cognitive impulsivity and impulsive behavior. Finch, Fleming and Spirito (5) asked teachers of emotionally disturbed children at a residential mental health center for children to rate on the Conners Teacher Questionnaire (3) in their classrooms. Their findings indicated that impulsive children displayed significantly more problem behavior. Specifically, the impulsive children scored significantly higher on Conners factors reflecting aggression, distractibility and hyperactivity. Montgomery and Finch (8) asked teachers to complete the Locus of Conflict Rating Scales (1) on their emotionally disturbed students in the classrooms. An externailzation and internalization score can be derived from this scale. In internalization of conflict, the impulses are highly controlled and the actual conflict is between impulses and their inhibitions. In externalization of conflict, impulses are freely discharged into the environment and the actual conflict is between the child's uninhibited impulsive behavior and the reactions they bring about in others. The study found that children with an impulsive cognitive style were found to be externalizers while children with a reflective cognitive style were found to be internalizers. In another research study, Finch and Nelson (6) asked parents to rate the Virginia Treatment Center Behavioral

Questionnaire (2) on their sons. The results indicated that in contrast to reflective emotionally disturbed boys, impulsives were more likely to talk of others blaming them unfairly, threaten to harm themselves, hit and bully other children, and be excessively rough in play.

While the impulsive behavior has been investigated extensively, anger arousal as a response to provocation of the impulsive children has been virtually neglected. Therefore, the purpose of the present study was to investigate the relationship between the impulsive cognitive style and anger arousal as a response to conflict situations. According to Eastman (4), self-reported anger is significantly correlated with peer reports of anger and aggression. In other words, children with high anger arousal or low anger control tend to have more aggressive behavior and other behavioral problems. In this study, it was hypothesized that impulsive children would have higher self-reported anger arousal in response to conflict situations than the reflective children.

## B. METHOD

### Subjects

The original sample consisted of 31 children (6 girls and 25 boys) who were residents of Virginia Treatment Center for Children, a psychiatric hospital for children with emotional behavioral problems. They ranged from 6 years,10 months, to 15 years, 5 months, with a mean of 13 years old and a standard

deviation of 1.96 years.

Each child was individually administered the Matching Familiar Figures Test (MFFT) to determine cognitive style. The children were divided into two groups, impulsive or reflective, on the basis of their MFFT latency and error scores, using the standard double median split procedure. The reflective group was composed of 11 subjects (8 boys) whose number of errors was below the median (10.5) and whose response time was above the median (10.45 sec.). The 11 children in the impulsive group made more than the median number of errors, and had response time below the median. The data from the nine children who did not meet the criteria for either group were not included in the data analysis.

Procedure

Self-reported anger arousal in response to provocation was assessed by the subject's rating on the Children's Inventory of Anger (CIA).

The CIA is a 71-item paper and pencil measure of a child's self-reported anger in response to conflict situations. The inventory was developed at Virginia Treatment Center for Children and is modeled after a measure which Novaco (10) designed for adults. The items are scored on a four point scale according to the frequency of their occurrence--"I don't care" to "I'm furious! I feel like really hurting or killing that person or destroy that thing!" A high score suggests a child with a high self-reported anger in conflict situations

while a low score is indicative of lesser self-reported anger arousal as a response to provocation.

## C. RESULTS

On the MFFT the mean latency for the impulsive group was 6.95 seconds (S.D.=2.03), with a range from 3.2 to 10.2 sec. For the reflective group, the mean latency was 13.9 sec(S.D.= 2.66), with a range from 10.5 to 18 sec. The mean number of first response errors was 17.8 for the impulsive group with a standard deviation of 9.06, while for the reflective group the mean was 7.64 with a standard deviation of 2.76.

The CIA mean score for the impulsive group was 185.9 with a standard deviation of 44.56 and a range from 111 to 259, while the mean score for the reflective group was 168.18 with a standard deviation of 41.29 and a range from 103 to 229. This difference between the two groups is not significant, $F(1,20)=0.94$, $P>0.05$, and indicates that there is no difference between reflective and impulsive emotionally disturbed children on their self-reported anger in response to provocation.

## D. DISCUSSION

The results of the present study indicates that emotionally disturbed children with an impulsive cognitive style do not have significantly higher anger arousal as a response to conflict situations than those with a reflective cognitive style. These

results are counter intuitive and require a careful analysis.

In this study, there were a few things requiring our attention. First, the sample was too small and the subjects were not equally represented by sex. The power of the test is approximately 0.3, which implies that this test has very weak power to reject a false null hypothesis.

Second, the CIA mean scores for both impulsive group (185.9) and reflective group (168.1) were lower than the mean scores (206.6 and 202.7) reported by Montgomery, Nelson and Finch (9) in their CIA reliability study with emotionally disturbed children. This implied that the subjects in the present study were generally lower in reported anger as compared to the averaged emotionally disturbed populations. Again, our sample was not a good representative of the population.

Third, this study failed to investigate the relationship between self-reported anger and the type of child psychopathology. Since many of the subjects in the sample belonged to the unclassified category, it was not feasible to do an analysis with the limited data. However, it is still believed that the type of psychopathology can influence self-reported anger in response to provocation.

Although the data did not support the hypothesis, it did bring in a new interpretation on the impulsives. The finding of the present study could mean that impulsives tend to act out more and quickly, but they need not feel more angry when confronting provocation. They act out quickly because they

apparently lack the ability to stop and think of the consequences of a behavior before engaging in the behavior.

Another related point is that in doing the CIA, the children heard each item read by the audiotape. As a result of this, the impulsive children were slowed down in their cognitive process as they had longer time in thinking between items. However, the impulsive children do not stop and think when confronting conflict situations in real daily life. So, it is suggested that by making the impulsives to go through the details and alternatives of a problem, it may help to slow down their cognitive impulsivity.

The issue of the relationship between the cognitve impulsivity and self-reported anger as a response to provocation remains to be further investigated. Additional work should focus on the nature of the impulsive's psychopathology and consequently would provide some additional insight to this area.

(Barstis & Ford, 1977). By and large, cognitive impulsivity has been demonstrated as a handicap to children's cognitive development.

In the social and moral behavior dimensions, research studies found that impulsives were less attentive and less mature in moral judgment. Welch (1973) found that impulsive preschoolers likely to start and stop their activities and to chat or roam between activities, but reflectives sustain attention even while chatting. In moral maturity, Schleifer and Douglas (1973) found that reflectives had a more advanced stage of moral judgment. They used stories to elicit judgment about relative goodness and badness. Level of moral maturity was scored on the basis of subjects awareness of the intention of the actor as opposed to his reliance on consequences. Results clearly indicated that reflectives made moral judgment on the basis of intentions rather than consequences.

In addition to the above research findings showing that cognitive impulsivity is a handicap or a liability to normal child development, impulsives are found in much higher proportions than reflectives among children diagnosed as hyperactive, brain-damaged, epileptic and mentally retarded (Messer, 1976). In order to remedy this relatively stable personality trait, many different treatment approaches had been made to alter their conceptual tempo. Although the remedial programs are not perfect, they do yield promising results.

Two main strategies, each coming from different conceptual views of cognitive style, seem to be promising methods in attempting to modify cognitive impulsivity —— cognitive training approaches and operant conditiong techniques.

The rationale behind the cognitive training approach is that what a child does during the interval between the presentation of a problem and subsequent response is an important covert element in his cognitive style, and therefore affects his ability to solve problems correctly. Meinchenbaum and Goodman (1971) did two studies with young impulsive children in order to see the effectiveness of a cognitive self-verbalization treatment program in modifying non-verbal behavior. In their first study an in individual training method which asked the impulsive subjects to talk to themselves overtly and then covertly was compared with two control groups. Results indicated that self-instructional group improved significantly on a variety of psychometric tests which assessed cognitive impulsivity, motor ability and performance IQ. In their second study, Meichenbaum and Goodman (1971) attempted to alter cognitive tempo with experimental models rather than under natural conditions. The purpose of the study was to compare the efficacy of cognitive self-instruction to a modeling procedure and a control group in altering the attentional strategy of impulsive children. The essential strategy used was to have the impulsive children observe a peer or adult model performing on the MFFT

or similar task while verbalizing reflective response strategies in the modeling group. The subjects in the self-instruction training group were told to perform the task while speaking the instructions aloud to themselves, much as the model they observed had just done (e.g. I have to look carefully at this one, then this one"). Results showed that both modeling procedure and self-instruction training increased response latency time but only the self-instruction training resulted in a significant decrease in errors.

Recently, Finch, Wilinson, Nelson and Montgomery (1975) did a study to investigate the relative effectiveness of cognitive training and training to delay before responding in modifying cognitive impulsivity in emotionally disturbed children. In their study, three groups of youngsters were compared. One group would receive training in verbal self-instructions, a second group would receive only training to delay before responding, and the third group was essentially a test-retest control group. Their results indicated that the children who were trained to employ verbal self-instructions were less impulsive in their responding, while those children who were trained to delay took longer before responding but made as many errors as previously.

Teaching impulsive children the visual scanning strategies directly is another promising method to decrease impulsivity. Egeland (1974) demonstrated that his intervention resulted in significantly improved performance on the MFFT and similar

tasks (in both latency and errors), and also had a generalization effect to a test of reading achievement. Egeland taught his subjects the explicit rules and basic strategies, which included looking at the standard and all the alternatives, breaking down the alternatives into component parts, and checking the standard to determine its correct form. Other studies using teaching scanning strategies (Albert, 1969; Nelson, 1969; Gaines, 1969; Patterson & Debus, 1974) were unanimous in their findings: increased MFFT latencies and decreased errors.

The operant conditioning approaches are another kind of method used to modify cognitive impulsivity. This theoratical viewpoint assumes that the cognitive style one employs is based on motivation. It is believed that one's motivation to solve a problem is largely a function of the environ-mental contingencies surrounding the situation; therefore, the impulsive child responds impulsively because of lack of sufficient motivation to employ reflective response from his cognitive-behavioral repertoire. Based on this understanding of impulsive children's impulsive response, we need to provide sufficient motivation for them to elicit the desired cognitive style rather than teaching them a new cognitive style. Briggs (1966) in his dissertation was successful in increasing latency and decreasing errors by using an operant approach which reinforced decreased or increased response latencies. In his study, reflective and impulsive fourth-grade boys were reinforced by means of colored lights for showing either increased or decreased latency from their previous responses. Reinforcement

for increasing latencies produced both longer latencies and few errors, while reinforcement for decreasing latencies led to shorter latencies and more errors.

By using a social punishment condition, Massari and Shack (1972) found that the number of errors both reflective and impulsive first-grade boys made on a two-choice discrimination learning task was significantly reduced. Erickson, Wyne and Routh (1973) penalized educable mentally retarded children for making errors on the Matching Familiar Figures Test by making them give up tokens exchangeable for food. The results supoorted the response cost strategy which led to increased latencies and decreased errors.

Recently, Nelson, Finch and Hooke (1975), working with emotionally disturbed children, demonstrated that the techniques of response cost and reinforcement were effective in modifying cognitive impulsivity both in terms of decreased errors and increased response time. In their study, they suggested that reflection-impulsivity dimension might involve a motivation-for-success component, as well as a fear-of-failure one. In order to test the hypothesis, they compared a group of impulsive and reflective children and their response to reinforcement versus response cost. Results indicated that impulsive children respond better under conditions of response-cost while reflective children respond better under conditions of reinforcement. In other words, the impulsive children did much better when they were given their reinforcers at the beginning of the session and had one taken away for each mistake that they made.

Kendall and Finch (1976; 1976) developed a treatment package which incorporates modeling, self-instructional training and response cost procedures. This new strategy was demonstrated to be effective in producing positive changes both on MFFT performance and on teacher-rated classroom behavior. In their first study, Kendall and Finch (1976) used a multiple baseline design in order to evaluate response-cost and self-instruction procedure with this youngster. The results showed that his observed behaviors were improved and the positive effects were generalized to the school situation as indicated from report card and teacher ratings. Having received these encouraging results from the case study, Kendall and Finch (1978) did a group comparison study in order to evaluate the combined package of response-cost and verbal self-instructions on the impulsive behavior of emotionally disturbed children. Again, results were encouraging with some generalization effect to the school situation.

After so many years of research, cognitive impulsivity has been clearly demonstrated to be handicapping to child development. It has been found that impulsive children in contrast to reflective childrenare less concerned about the quality of their cognitive product, are less able to sustain attention, are more aggressive, make fewer advanced moral judgments, and are less considerate to others. In educational process, impulsive children are deficient in reading and mathematics skills; they deal with problems in a non-analytic fashion. As cognitive impulsivity is a deficit for children,

many remedial programs had been employed to modify cognitive style. The cognitive approaches and the operant conditioning approaches are the two main strategies used in the remedial programs. In cognitive approaches, self-instruction training recieves the most attention. Verbal self-instructions are actually step-by-step verbalizations about the problem definition, problem approach, focusing of attention, coping statements, and statements of self-reinforcement. In operant condtioning approaches, the response-cost procedure appears to be a very effective strategy to modify cognitive style. Recently, the treatment package incorporating self-instructional training, response-cost procedures, and modeling has been demonstrated to bring desired changes in impulsive children. By and large, although none of the remedial strategies can claim full success at this time, they do bring promising effects in modifying cognitive impulsivity to a certain extent. In conclusion, it is clear that cognitive impulsivity in children deserves our attention and further research on remedial strategies is necessary.

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