Thirty institutionalized "predelinquent" preadolescents and 30 public school nondelinquent preadolescents were compared on Kagan's Matching Familiar Figures Test (MFF) of cognitive impulsivity. Contrary to predictions, the former group was more reflective than the nondelinquents on both the latency and error dimensions of the MFF. Possible interpretations of the results are offered, as are suggestions for research on the impact of environmental factors on cognitive style.

REFLECTION-IMPULSIVITY IN PREDELINQUENT PREADOLESCENTS IN A RESIDENTIAL FACILITY

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In the past decade the Matching Familiar Figures Test (MFF), a measure of the cognitive style dimension of reflection-impulsivity (R-I), has received considerable attention in the developmental psychology literature. Designed to assess the

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degree to which one pauses to evaluate the results of one's cognitive efforts in a situation containing response uncertainty, the MFF consists of 12 items, each composed of a picture of an object, scissors, for example, and five variations plus a duplicate of that picture (Kagan, 1965). The task is to locate the duplicate, that is, match the sample. A wide range of latency to initial response and number of errors has been found. Reflective persons take more time to produce solutions and also tend to produce fewer errors than do their impulsive counterparts (Eska & Black, 1971; Kagan, 1965).

In light of the prominence given to a supposed trait of "impulsivity" in much of the theoretical and clinical writing on delinquent personality features (e.g., Glueck & Glueck, 1974; Grossbard, 1962; Kvaraceus, 1966), it is surprising that the MFF and cognitive impulsivity have been largely uninvestigated by criminal justice researchers. In the one published study on cognitive impulsivity and delinquency, Saunders, Reppucci, and Sarata's (1973) adolescent reformatory inmates (mean age = 18.2) did not differ from high school seniors on the MFF, nor did training school runaways differ from nonrunaways (mean age = 14.9).

The present study, comparing the MFF performance of "pre-delinquent" preadolescents in a residential setting and public school nondelinquent preadolescents, examined cognitive impulsivity in a sample younger than Saunders et al.'s. Since cognitive impulsivity tends to decrease with age (Kagan & Kogan, 1970), Saunders et al.'s lack of positive results may have been partially due to their teenagers (both reform school and controls) being more homogeneously reflective on the R-I dimension than a younger population would be.

Previous research with nondelinquents has found cognitive impulsivity to be positively associated with acting out behavior. Thus Weintraub (1973), studying children who were clients at a mental health center, found "externalizers" (those whose symptoms involved acting out behavior) to be more impulsive than "internalizers" (those with phobic and psychosomatic symptoms). Similarly, teachers' ratings of acting out behavior in non-
delinquent pupils correlated significantly with the pupils' number of MFF errors (Glenwick et al., 1976).

On the basis of these results, it was hypothesized that youngsters with a history of serious aggressive behavior would demonstrate greater cognitive impulsivity than would a control group of nondelinquents.

**METHOD**

*Subjects.* The experimental subjects were 30 white males (mean age = 10.93, SD = 1.22) placed in a private nonprofit voluntary institution in upstate New York. Though not adjudicated delinquents, they had been referred to the facility by their county's department of social services because of serious acting out, aggressive, and predelinquent behavior in their schools and communities. The boys lived in cottages (residences for eight persons) on the grounds and were involved in a rehabilitation program emphasizing resocialization (through an eclectic approach including milieu therapy, group, and individual counseling) and education (in the on-campus school). Most were from lower socioeconomic status, multiproblem families and came from cities and towns in the Mid-Hudson region of New York State.

The comparison group, matched for age with the predelinquents, consisted of 30 white males from a public school in a middle-class upstate New York suburb.

*Procedure.* Each subject was individually administered the elementary version of the MFF by an adult examiner. The experimental subjects were tested after having been at the facility for at least a month and were not scheduled for discharge in the coming month. (Average length of stay at time of testing was 17.07 months, SD = 13.32 months.) The comparison subjects were assessed in school approximately three months after the start of the academic year.
Instrument. The MFF was the index of R-I. Latency (in tenths of a second) to first response and number of errors were recorded for each of the 12 items. Each subject's mean latency and total number of errors for the 12 items were then calculated.

IQ scores (based on previously administered intelligence tests) were available for all the children. Because previous research (Messer, 1976) has reported a moderate relationship between MFF scores and intelligence, IQ served as a covariate in the present study.

RESULTS

T-tests revealed that the predelinquents were significantly more reflective than the nondelinquents on both MFF dimensions. They had longer mean latencies per item, 14.77 seconds (SD = 7.79) versus 9.30 seconds (SD = 4.47), t = 3.58, p < .001; and committed fewer total errors, 5.43 (SD = 1.61) versus 8.63 (SD = 3.90), t = 3.99, p < .001. These findings remained significant when IQ effects were covaried out.

DISCUSSION

Salkind (1977), in his normative MFF data on 147 nondelinquent, middle-class 11-year-old males, found a mean latency of 13.6 seconds and a mean of 8.39 total errors. Comparing our results to these norms we see that, interestingly, the institutionalized predelinquent children were more reflective than the "typical" nondelinquents of their age. That is, they took longer to arrive at an answer (14.77 versus 13.61 seconds) and committed considerably fewer errors (5.43 versus 8.39).

Our findings are consistent with Saunders et al.'s (1973) failure to uncover a positive association between delinquent behavior and cognitive impulsivity. However, whereas Saunders et al. found no differences in MFF scores between their two groups (teenagers in a reformatory and high school seniors), our pre-
delinquent sample was more reflective than both our comparison group and Salkind's normative MFF population.

Several explanations exist which account for our unanticipated results. First, one might speculate that the predelinquents possessed a trait (or long-entrenched habit) of reflectivity, which existed prior to entrance into the residential setting and remained unchanged throughout their stay. This explanation is fairly improbable, though, in light of the finding that noninstitutionalized youngsters possessing a history of acting out behavior are generally impulsive on the MFF (Glenwick et al., 1976; Weintraub, 1973).

Alternatively, and more likely, the predelinquents may have behaved more reflectively because of more environment-based reasons, which involve: (1) possible institutionalization effects; (2) the impact of the resocialization program which, while not specifically aimed at enhancing reflectivity, could have served to do so; and (3) the boys' wariness over the uses to which the data would be put (despite the examiner's reassurances of strict confidentiality). Whatever the contributing factors, in this particular environment and at this time, these predelinquent preadolescents demonstrated less impulsive behavior than a nondelinquent group.

Landau (1976: 757) recently cited current research on the effects of institutionalization on delinquents' time orientation and self-concept as "examples of the possible effect that salient situational factors may have on characteristics and behaviors that are too frequently considered as stable and situation-free personality traits." Our results similarly suggest the importance of natural situational factors on measures of cognitive style. Most studies to date on changes in cognitive style (e.g., Douglas, et al., 1976; Meichenbaum & Goodman, 1971) have looked at modifications produced by relatively short-term experimental projects specifically geared to decrease impulsivity. It would be valuable to examine a variety of children's programs in juvenile justice, mental health, and other facilities to determine if modifications in impulsivity (and correlated behaviors) occur in these settings.
To determine the generalizability of the present results, as well as the determinants of predelinquents' and delinquents' R-I scores, the next logical steps would appear to be studies (a) cross-sectionally assessing the impulsivity of one sample just institutionalized and a second sample which had been institutionalized several months and (b) longitudinally assessing a group’s impulsivity at several time points during institutionalization. Such an approach could also have potential for exploring adult offenders’ cognitive impulsivity using the adult version of the MFF.

NOTE

1. While one might argue that differences in socioeconomic status might have accounted for the findings, this is quite unlikely, since previous studies (e.g., Heider, 1971; Mumbauer & Miller, 1972; Schwebel, 1966) have consistently reported lower-class youngsters to be more impulsive than middle-class ones on the MFF. Consequently, in the present study predictions based on social class would have led one to expect the predelinquents to be less reflective than the nondelinquents, which was contrary to the obtained results.

REFERENCES


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