Running head: COGNITIVE STYLES AND AGGRESSION IN PRESCHOOL CHILDREN

Relationships between Cognitive Styles and Levels of Aggression in Preschool Children

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From early on in my childhood, my family has stressed to me the importance of an education and the educational process. Through my love of education, my vocation was virtually predetermined. Elementary Education seemed to be the calling in which I might pass down my passion for learning. I have graduated from North Central Texas College with my associate's degree in science. I am a current member of Phi Kappa Phi and have been part of the Developing Mentor's program for the past year. My future plans are to leave UNT with a Masters in some branch of special education, preferably in autism.

Abstract

This study examined aggressive preschool children for similarities in two areas of cognitive styles: conceptual tempo and field independence/dependence. The participants in this study were 27 4-, 5-, and 6-year-old children whose parents consented to their participation. In this study, the researcher's found that as aggression increased so did Kansas Reflection-Impulsivity Scale for Preschoolers errors. This would indicate more aggressive children might tend to have less accurate decision-making skills. Findings also indicated that as aggression increased, KRISP time decreased. This indicated more aggressive children might tend to be more impulsive in their decision making. Aggression, however, appeared to be unrelated to field independence/dependence in these children.

Relationships between Cognitive Styles and Levels of Aggression in Preschool Children

Statement of the Problem

Aggressive behavior has a strong significant correlation with maladaptive long-term life outcomes, such as criminal careers, racism, poverty, gang activity, coercive parenting styles, and violence (Macgowan, Nash, & Fraser 2002). Aggressive behavior in early adolescence has "deep roots" in school related factors, such as teacher's grading practices, classroom management skills, and teaching practices. Aggressive behavior during this time diverges more from failure at school than from family characteristics (Fraser, 1996).

Purpose of Study

The purpose of this study was to investigate the relationship between aggression and learning styles in children to determine if there is a common learning style that aggressive children use. The reason this research is vital is that through it teachers might gain insight into aggressive children and adapt their teaching style to the children's style of learning.

Review

Learning Disabilities and Aggression

In the study of learning disabilities and aggression is filled with controversies. Researchers disagree over what these two areas of study have in common, if anything. There is even controversy over the simplistic definitions of basic keywords. For instance, learning disabilities have been defined as "low academic achievement, placement in disability classes, low intellectual capacity, and a significant discrepancy between achievement and intelligence" (Cornwall & Bawden, 1992, p. 282). Some Researchers include autism in the definition (Ross & Oliver, 2002). Aggression has been defined as both verbal and non-verbal assault. Verbal aggression is commonly defined as yelling, swearing, and insulting behavior, whereas non-verbal

aggression includes hitting, kicking, and physical conflict with others or objects (Benson & Fuchs, 1999). In that learning disabilities and aggression are such broad terms, it is only logical they encase a wide variety of hypotheses on causes, symptoms, and treatments (NIMH, 1999).

There are multiple hypotheses on the entities that unite learning disabilities and aggression. They cover a realm of topics, including genetics, neuroanatomy, endocrinology, physiology, emotions, cognition, and environmental influences (Baker & Bramston, 1997). Investigations of the literature revealed three hypotheses common to several studies. One hypothesis stated aggression is a reaction to academic failure (Cornwall & Bawden, 1992; Grande, 1988; Larson, 1988). There are four common characteristics of learning disabilities which typically cause frustration; frustration is then followed by acting out. These four characteristics are: "1) working harder than others but achieving less, 2) uneven learning polarities: unexplained failures along with successes, 3) constricted potential: intelligence with no place to go, and 4) character denigration" (Orenstein, 2001, p. 93). A second hypothesis is the differential treatment hypothesis. According to this hypothesis, youths with and without learning disabilities engage in the same kind of delinquent behavior, but youths with learning disabilities were treated differently because of their poor school performance (Brier, 1989; Cornwall & Bawden,1992; Larson,1988). A further theory is the susceptibility hypothesis. This hypothesis states learning disabilities are frequently accompanied by "a variety of socially troublesome personality characteristics" (Larson, 1988 p. 359). Youth with learning disabilities are inept with social skills. When combined with the fact that learning disabilities are usually accompanied by over activity, attention deficits, impulsivity, and distractibility, the result is a child who attracts the attention of society (Routh, 1979).

One can ask the question, are youngsters who have learning disabilities more likely to show aggressive behavior? Three studies have examined this question previously. Richmond, Stevenson, and Graham as sited by Cornwall & Bawden in 1992, used a parental rating scale for problem behavior, found no statistically significant association between learning disabilities and problem behavior. Berger, Yule, and Rutter as sited by Cornwall & Bawden in 1992, used a teacher rating scale for problem behavior, reported a prevalence of the co-occurrence of learning disabilities and behavior problems. Sturge as sited by Cornwall & Bawden in 1992, also used a teacher rating scale for problem behavior, reported antisocial behavior and reading disabilities co-occurred (Cornwall & Bawden, 1992). Both studies that used the teacher rating scale for problem behavior found a significant association between learning disabilities and aggressive behaviors while the study that used the parental rating scale revealed no significant association. One can question which rating scale is more reliable -- a parental view wherein bias for one's child might blind the parent to the child's aggressive behavior, or a teacher's view, which might prove less biased.

The relationship between learning disabilities and aggression needs to be better understood. "Aggressive behavior becomes more visible as the intensity of the learning disability increases" (Allen, 2000, p. 42). This leads to a discussion of the symptoms of each. Aggression's symptoms are the easier of the two to identify. The symptoms are in the definition of verbal and non-verbal assault. Learning disabilities, on the other hand, have symptoms that hide from an untrained observer. The first symptom to usually appear is obvious delays in reaching developmental milestones. The other symptom is a serious gap between chronological age and cognitive age. Consequently, when a 10-year-old speaks and reasons similarly to a 7-year-old, there is a high probability the child has a learning disability (NIMH, 1999).

Treatment for aggression and learning disabilities comes in many forms. Although treatment studies have primarily been conducted in two fields of research, medicinal and behavior modification, there is a new developing area of study, the cognitive-behavioral approach. Medicinal research in the area of aggression has recently been criticized because of its use. Numerous studies have shown medicine is used more for the benefit of caregivers than for children (Allen, 2000). This means medication does not necessarily benefit the child one way or the other, but instead makes him/her "easier" for caregivers to manage. Medicinal research for learning disabilities treats only the side effects of learning disabilities, i.e., over activity, attention deficits, impulsivity, and distractibility (NIMH, 1999). Behavioral modification has been found to be very effective in the treatment of both learning disorders and aggression, as long as both are treated at the same time (Adams & Allen, 2001).

Learning disabilities and their relationship to aggression continue to be controversial topics among researchers. Although the basis of the relationship is unknown, the fact there is a relationship is evident by the amount of research connecting the two variables.

Learning Styles and Learning Disabilities

There are three learning styles: affective, cognitive, and physiological (Keefe, 1988).This paper is organized around the different types of learning styles and how each is related to people with learning disabilities.

Affective styles can be divided into 2 sub-groups: conceptual systems and psychological types. There are 4 levels of conceptual systems. At the lowest level people are more biased, rigid, and evaluative; at the highest level, people are flexible, independent, and tolerant. The psychological types, first identified by Jung, are classified into four parts: sensing, intuitive, thinking and feeling. The sensing and intuitive types describe how people see the world. Sensing

types would be realistic and factual, while intuitive types would perceive issues as more global and imaginative. The thinking and feeling types reflect ways in which individuals make decisions. The thinking types would base their decisions on logic and objectivity, while the feeling types would make decisions based on emotion instead of logic (Reiff, 1992). People with learning disabilities would have personalities typical of an intuitive, feeling learning style (Carbo, 1991). Consequently, this would indicate that people with learning disabilities might be more global in their perception of issues, yet more subjective in their decision-making.

Cognitive styles are sub-grouped into 6 areas: brain theories, modalities, conceptual tempo, field dependence and independence, mind styles and multiple-intelligence. Brain theories are theories evaluating which hemisphere of the brain is more dominant, arguing the right hemisphere is global, holistic and visual spatial while the left hemisphere is analytical, sequential, and verbal. There are also 4 types of modalities related to learning in the classroom: visual, auditory, tactile, and kinesthetic. Visual learners learn by seeing, auditory learners by hearing, tactile learners by touching, and kinesthetic learners learn by movement. Learning-disabled students use a more tactile or kinesthetic learning style. The conceptual tempo of a person would tell whether or not he/she is a reflective or impulsive learner (Reiff, 1992). A learning-disabled child would normally show an impulsive learning style (Kataria, Hall, Wong, & Keys, 1992). This means a person with a learning disability would typically not allow time for examination of materials.

With response to field independence /dependence, a field dependent individual cannot easily separate a simple shape from a complex design, while a field independent person is not distracted by the complex figure and can easily distinguish the hidden figures. Field dependent students are more global and need strategies to help them organize and comprehend materials.

Field independent students are more analytical and internally motivated (Reiff, 1992). A student with a learning disability might be classified as a field dependent learner, in that a student with a learning disability might require more time to grasp the details of a subject.

Gregorc, as sited by Reiff in 1992, contends learners use concrete or abstract thought and their thoughts are either random or sequential. These 2 groups are then combined to make four sub-groups: concrete sequential, concrete random, abstract sequential, and abstract random. These 4 groups make up the mind styles category of cognitive styles. Gardner, as sited by Reiff in 1992, was the originator of the ideas about multiple intelligences. He has identified 8 intelligences. One is bodily-kinesthetic intelligence, which is a type of intelligence based on how well someone can use his or her body. Athletes would have a high degree of this type of intelligence. Linguistic intelligence would come next on Gardner's list. A linguistically intelligent person would be gifted in the art of language. This type of intelligence would be found in successful poets and journalists. Third on the list would be logical-mathematical intelligence. Examples of this intelligence would be a mathematically inclined learner, such as an engineer or scientist. Musical intelligence is also included. A person with this type of intelligence has pitch, melody, and rhythm, e.g., a singer or instrument player. A spatially intelligent learner would be more visual and think in pictures and images. A skilled artist or craftsman would have this type of intelligence. People with interpersonal intelligence are considered social butterflies at school. Their intelligence stems from how they cope in society. And last but not least, an intrapersonally intelligent person is someone whose knowledge is based on his or her own personality (Reiff, 1992). These people need time to dream and be alone. According to Armstrong (1995), these multiple intelligences are responsible for most children being labeled as learning disabled because professionals do not look at multiple intelligences the same as I.Q.

scores. He contends children are "learning different not learning disabled" (Armstrong, 1995 p. 34).

Rita and Kenneth Dunn (1990) were the first to conceive an approach of the learning styles called the physiological styles. Delineating the styles further, 5 learning style elements were determined to influence a person's learning: sociological stimuli, environmental stimuli, physical stimuli, emotional stimuli, and physiological stimuli. Using this approach, students with learning disabilities were determined to prefer a formal design, auditory modality, and studying in the late morning. In addition, they were found to be less motivated and responsible than students without learning disabilities (Yong & McIntyre, 1992).

Teachers can apply these conclusions about how learning styles affect learning-disabled students to their teaching styles. Doing this might help to improve the grades and enhance the self-esteem of the learning disabled students in their classroom.

Rationale for the Present Study

This study investigated the relationship between aggression and learning styles in children. Research has demonstrated that delinquent children often display the same educational characteristics as children with learning disabilities (Meltzer, Levine, Karniski, Palfrey, & Clarke, 1984). Based on these research findings, it is hypothesized that aggressive children might also share similarities in learning styles with children diagnosed with learning disorders. Learning styles are like fingerprints to students; consequently, this information has the potential to give caregivers and educators greater insight into teaching aggressive children.

Hypotheses

The present study examined aggressive children for similarities in two areas of cognitive styles: conceptual tempo and field dependence/field independence. In conceptual tempo there are

2 hypotheses regarding the relationship between aggression and learning styles. According to the texts, aggressive children will show an impulsive learning style similar to children with learning disorders (Kataria et al., 1992). Secondly, the most aggressive children will show reflective incorrect answers, as did the aggressive children in the study done by Messer and Brodzinsky (1979). In the area of field dependence/ field independence, the hypothesis is that aggressive children will display field dependence, similarly to children with learning disabilities, while children who are not aggressive will show field independent attributes.

Specific hypotheses for this study were:

Hypothesis 1. There will be a significant ($p < .05$) positive correlation between aggression and the number of errors using the Kansas Reflection-Impulsivity Scale for Preschoolers (KRISP).

Hypothesis 2. There will be a significant ($p < .05$) negative correlation between aggression and time recorded on the KRISP.

Hypothesis 3. There will be a significant ($p < .05$) negative correlation between aggression and the number of embedded figures found in the Preschool Embedded Figures Test (PEFT).

Methodology

Sample

The participants in this study were the 4-, 5-, and 6- year-old children attending a local preschool in Denton, Texas, whose parents consented to the children's participation in the research. There were 27 participants who met these criteria, including 16 males and 11 females. Ethnicity of the children included 16 Caucasian, 8 African Americans, 2 Hispanic, and 1 Caucasian/African-American mix.

Measures

Each child was observed for 15 minutes. A stopwatch was used by the researcher to record the child's behavior in 15-second intervals. After looking down at the stopwatch for 15-seconds, the observer looked back up at the student and recorded the behavior being exhibited (e.g., sitting quietly, talking to another child, etc.).

The Child Behavior Checklist (CBC) is a survey which has two forms, one completed by teachers and another by parents (Achenbach, 1997). The purpose of the CBC is to assess children's "social competence" and "behavior problems" to define the behaviors for empirical use. "The CBC is a well-researched instrument with exceptionally strong reliability and validity data" (CBC Review, n.d.). It was made to span the ages of 1 ½ -5 years of age. The CBC obtains ratings by teachers on 99 items, plus descriptions of problems, disabilities, what concerns the respondent most about the child, and the best things about the child. The scales of the CBC are based on ratings of 1,113 children and are also normed on 1,192 children (Achenbach System of Empirically Based Assessment, 2004). Teachers complete the Teacher Rating Form of the CBC indicating not true, true, or very true in response to each question on the survey for each child. The survey categorized the teacher's ratings of the children into a variety of problems:

emotionally reactive, anxious/depressed, somatic complaints, withdrawn, attention problems, aggressive behavior, and other problems. The sum of the raw scores for each problem as well as raw scores for internal, external, and total problems were calculated from the CBC data. Raw scores were then converted to *t*-scores using calculations provided on the CBC. Internal problems were emotionally reactive, anxious/depressed, somatic complaints, and withdrawn. External problems were attention problems, and aggressive behavior. The category of total problems represented the sum of all problems assessed. In this study, the raw aggression and raw externalizing scores were used to assess the children for aggressive behaviors. The higher a child scores on the CBC increases the likelihood of him/her having higher levels of aggression.

The KRISP test was used to measure the reflection and impulsivity of the preschoolers. Each child was asked to match an object to another object out of a group of 5 objects. The time needed for each child to pair the objects was recorded, along with accuracy of the response and the number of attempts the child needed to reach the correct answer. The scoring system for the KRISP used the mean time and the sum of the attempts for each of the figures. A low error score means a child is more accurate while a high error score means a child is more inaccurate. A low time score means a child is more impulsive and a high time score means a child is more reflective. Based on this scoring procedure, children were determined to be Impulsive-Correct, Impulsive-Incorrect, Reflective-Correct, and Reflective-Incorrect (Wright, Gaughan, & McClanahan, 1978).

The PEFT required preschoolers to identify a simple object within a more complex one and then trace the simple object with their finger. For each correct answer, one point was given, so that higher scores mean a child is more field independent while a low score means a child is more field dependent. The time it took for the child to identify the embedded object was also

recorded. There was a maximum time of 30-seconds allotted for each object. The reliability and validity of the PEFT suggests it is useful with children as young as 2 ¾ years of age, although it should only be used as a research tool. This test measured the field dependence/field independence of each student by measuring the number of times the child could correctly find the embedded object (Coates, 1972).

Procedures

A permission slip was sent home with every 4-, 5-, and 6-year-old in the preschool. As permission slips were returned, the researcher observed the student during his/her normal activities for approximately 15 minutes to assess aggressive behavior. During this time each student's teacher also completed the Teacher Rating Form of the CBC. Finally, the PEFT and the KRISP were administered to each child by the researcher in a one-on-one setting to assess for impulsiveness/ reflectivity, and field dependence/field independence.

Results

Becuase the observation of each child yielded no usable data, this information was dropped from the analysis. Data analyses were conducted using the following variables: KRISP time score, KRISP error score, PEFT score, and both the raw aggression and externalizing *t*-score obtained from the CBC. Descriptive statistics for these variables may be found in Table 1.

Insert Table 1 about here

KRISP Errors and Aggression

Hypothesis 1 predicted a significant ($p < .05$) positive correlation between aggression and the number of errors on the KRISP. Correlational analyses indicated a significant ($p < .01$) positive correlation between the raw aggression score on the CBC and the KRISP error score ($r =$

.55). Correlational analyses indicated a significant (p =.01) positive correlation between the externalizing t-score on the CBC and the KRISP error score (r = .53) (see Table 2).

Insert Table 2 about here

KRISP Time and Aggression

Hypothesis 2 predicted a significant ($p < .05$) negative correlation between aggression and time recorded on the KRISP. While correlational analyses indicated this negative correlation between the raw aggression score and the KRISP time was not significant ($p > .05$; $r = .37$), the relationship did approach significance ($p = .08$). Correlational analyses indicated a significant ($p <.05$) negative correlation between the externalizing t-score on the CBC and the KRISP error score ($r = -.46$) (see Table 2)

PEFT and Aggression

Hypothesis 3 predicted a significant ($p < .05$) negative correlation between aggression and the number of embedded figures correctly found in the Preschool Embedded Figures Test. While these findings were found to be negative, correlational analyses indicated no significant ($p > .05$) relationship between the PEFT and the raw aggression scores on the CBC. Correlational analyses also indicated no significant ($p > .05$) relationship between the PEFT and the externalizing t-score on the CBC (see Table 2).

Discussion

Findings from this study indicated that as aggression increased so did the number of errors on the KRISP. This would indicate more aggressive children might tend to be less accurate in their decision making. Findings also indicated that as aggression increased, KRISP time decreased. This would indicate more aggressive children might tend to be more impulsive in their decision making. Aggression however, appears to be unrelated to field independence/dependence in these children.

Consequently, this study seems to support the fact that children who are aggressive may also tend to be impulsive. This could mean an aggressive child might not allow him/herself time for examination of materials, and lack of examination could lead to improper and uncompleted work on the part of the student. This might result in the teacher's need to utilize large amounts of time to correct the student's work and to ensure his/her work is completed. The teacher's realization that a child with aggression might also be prone to impulsivity might allow the teacher to better plan to allow more quality time reviewing instructions with the child. Impulsivity in children also leads to higher stress levels in educators (Greene, Beszterczey, Katzenstein, Park, & Goring, 2002). If an educator is aware of a child's learning style before entering a classroom with an aggressive child who might be impulsive, he/she might be less likely to become frustrated or lose control.

General Limitations

One limitation of this study was the sample size. It was very small group consisting of a total of 27 participants. One result of the small sample was unequal representation of children with higher levels of aggression and those with lower levels of aggression. Also, there was very

little variation in children's ethnicity. Becuase the sample size is so small with little variation in the characteristics of the subjects, the findings of this study cannot be generalized to the population of aggressive children as a whole.

Suggestions for Future Research

A study which would include a larger sample size with more diversity in levels of aggression as well as ethnicity might provide better means of determining if children who are more aggressive are also more field dependent. A larger sample size would also enable the researcher to generalize the research results. Such a study is needed to advance the creation of a school-centered prevention and early intervention curriculum for maladaptive life outcomes. Such a resurrection would strengthen a child's academic skills, which would, in turn promote school involvement and lead to a higher level of academic achievement and achievements of more productive life-long goals for aggressive children (Frazer, 1996).

Conclusions

Data from this study yielded significant findings, but the study itself was limited in ways previously discussed. However, the limitations of this study should not distract from its benefit. It helps to further the groundwork for understanding and teaching aggressive children in order to better understand how these children learn as well as to better individualize teaching instruction for them.

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Table 1:

Descriptive Statistics

	n	*M*	*s.d.*	Range
CBC: raw aggression	27	8.11	11.6	0-43
CBC: t-score Externalizing	27	52.56	12.21	36-86
KRISP: time	23	3.36	1.07	1.6-5.2
KRISP: error	23	4.3	3.91	0-13
PEFT	27	15.48	3.49	9-23

Table 2:

Correlations

		Child's Age	CBC: Raw Aggression	CBC:- t-score Externalizing	KRISP: time lo=reflective hi=impulsive	KRISP: error lo=accurate hi=inaccurate	PEFT: lo=field dep. hi=field indep.
Child's Age	r	1	-.555**	-.588 **	.523*	-.581**	.630**
	Sig. (2-tailed)	.	.003	.001	.011	.004	.000
	N	27	27	27	23	23	27
CBC: Raw Aggression	r	-.555**	1	.958**	-.373	.549**	-.260
	Sig. (2-tailed)	.003	.	.000	.079	.007	.191
	N	27	27	27	23	23	27
CBC: t-score	r	-.588**	.958**	1	-.458*	.527**	-.220
	Sig. (2-tailed)	.001	.000	.	.028	.010	.269
	N	27	27	27	23	23	27
KRISP: time	r	.523*	-.373	-.458*	1	-.674**	.258
	Sig. (2-tailed)	.011	.079	.028	.	.000	.234
	N	23	23	23	23	23	23
KRISP: error	r	-.581**	.549**	.527**	-.674**	1	-.508*
	Sig. (2-tailed)	.004	.007	.010	.000	.	.013
	N	23	23	23	23	23	23
PEFT	r	.630**	-.260	-.220	.258	-.508*	1
	Sig. (2-tailed)	.000	.191	.269	.234	.013	.
	N	27	27	27	23	23	27

**. Correlation is significant at the 0.01 level (2-tailed), or less.

*. Correlation is significant at the 0.05 level (2-tailed, or less.