

***SUBTYPES OF AGGRESSIVE CHILDREN
BASED ON PARENT RATINGS***

A Senior Thesis

By

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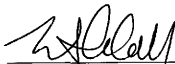
Group: PSYCHOLOGY I

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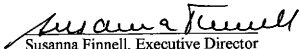
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Submitted to the
Office of Honors Programs and Academic Scholarships
Texas A&M University
In partial fulfillment of the requirements for
1997-98 University Undergraduate Research Fellows Program



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Fellows Group: Psychology I

Running head: SUBTYPES OF AGGRESSIVE CHILDREN

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Abstract

The existence of subtypes of aggressive children based on their parents' ratings of their aggressive behavior was examined in this study. The subjects' raw scores from the Child Behavior Checklist (Achenbach & Edelbrock, 1991) were used to perform a cluster analysis of the eight subscales of behavior. The results indicated that two distinct subtypes, or clusters, existed within this data set. Cluster 1 was composed of 23 children whose parents rated them as highly aggressive and whose means for aggressive behaviors on each of the eight subscales were above average. Cluster 2 consisted of 31 children who were rated by their parents as only average in aggressive behaviors on all eight subscales. Because all 54 subjects in this study had been designated "aggressive" by their teachers and peers, the different subtypes which emerge from the cluster analysis question the validity of parent ratings. These findings implicate that subtypes of aggressive children do exist within an aggressive sample; however, these subtypes are distinguished by parent ratings of behavior alone.

Subtypes of Aggressive Children

Based on Parent Ratings

Aggressive behavior as a method of solving or reacting to social problems has become a focus in recent years for many researchers and practitioners. Aggression has been revealed to be similar in stability to intellectual competence, especially for males, as well as stable across generations within a family (Huesmann, Eron, Lefkowitz, and Walder, 1984).

A growing body of research has indicated that there are variations, or subtypes, of aggressive children. These variations are discovered most often through behavior variables as rated by the parents and teachers of these children. In a study by Dykman and Ackerman, 1993, parent and teacher ratings were found to be more sensitive than laboratory measures in detecting these subtypes. Recognition of such subtypes by the research and practitioner community is becoming increasingly important, as it has been suggested that early aggressive behavior leads to later crime and delinquency, as well as antisocial behavior and adult psychopathology (Stattin and Magnusson, 1989, and Christian, Frick, Hill, Tyler, and Frazer, 1997). Aggression was the most significant predictor of delinquency in a study by Roff, 1992. Brook, Whiteman, and Finch (1992) also discovered that childhood aggression was a precursor of adolescent drug use and delinquency. Childhood aggression predicted self-reported externalized and internalized disorder and parent-reported externalized disorder, and it also appeared to be a significant predictor of adolescent disorder (Coie, Lochman, Terry, & Hyman, 1992).

Aggressive children are not a homogenous population (Day, Bream, and Pal, 1992). Recognizing differences between subtypes or variations of aggressive children is

important for parents and teachers, who interact with these children on a daily basis, as well as for clinicians, who seek to find appropriate treatments for conduct-disordered children. Discovering such differences and the most effective means of treatment for each is critical for both the academic and social improvements in children's behavior.

Christian et al. (1997) found that the presence of callous and unemotional traits with symptoms of oppositional defiant disorder and conduct disorder as rated by parents and teachers designated four clusters, or subtypes, of children. These four clusters revealed a clinic control cluster, a callous-unemotional cluster, an impulsive conduct cluster, and a psychopathic conduct cluster. In research by Dykman and Ackerman (1993), three subtypes of aggressive children were revealed. Without hyperactivity (ADD/WO), with hyperactivity (ADHD), and with hyperactivity and aggression (ADDHA) were found to correlate highly with oppositional and conduct behaviors (those with ADDHA) as well as with anxiety and depressed mood (ADD/WO).

Another study by McConaughy and Skiba (1993) also discovered comorbidity between variable clusters of aggression and aggressive behavior, aggression and delinquent behavior, aggression and anxious/depressed, and aggression and attention problems syndromes. These variables were derived from the Child Behavior Checklist, or CBCL, and the Teacher's Report Form (TRF) by Achenbach and Edelbrock (1991), which are rating scales parents and teachers complete to assess aggressive children's behaviors. The Teacher's Report Form was also used in a study by Day et al. (1992), which discovered two subtypes of aggression in children identified as proactive and reactive. A study by Biederman, Faraone, Milberger, and Doyle (1993) found that when a parent report of aggressive behavior led to a Diagnostic and Statistical Manual of

Mental Disorders-III diagnosis of such behaviors, the teacher report also proved to be a positive identification. Edens, Cavell, and Hughes (under review) also discovered two distinct subtypes of aggressive children, those who reported globally positive ratings and those reporting globally negative ratings, when using self-report measures of perceived competence and perceived social support to discriminate these differences. When Edens et al. (under review) examined a cluster analysis using aggressive children's perceptions of support and significant others' perceptions of relationship quality, three distinct subgroups were revealed. Vitiello and Stoff (1997) have also found qualitatively distinct subtypes of aggression in children. They have identified a consistent subdivision between "an impulsive-reactive-hostile-affective subtype" and "a controlled-proactive-instrumental-predatory subtype" (Vitiello and Stoff, 1997). Poulin, Cillessen, Hubbard, and Coie et al (1997), in studying the behavioral similarity phenomenon in childhood for aggression, found that subtypes of aggressive children existed as proactive and reactive aggressive types.

In this study I attempted to identify subtypes of aggressive children based on the raw scores from the Child Behavior Checklist (CBCL) (Achenbach and Edelbrock, 1991). These parent ratings of aggressive behaviors on the eight major subscales or variables of aggressive behavior will reveal the subtypes. I predict to find three clusters of aggressive children that differ on scores of these subscales, namely with high scores in anxious/depressed symptoms, attention problems, and aggressive behaviors. Because the symptoms of these three subscales would be apparent to the parents of these aggressive children on a daily basis, I predicted that these behaviors would be the most frequently reported and therefore indicate the most prevalent subtypes of aggressive children in this

sample. This research will be part of a larger, ongoing research effort that studies the effects of aggressiveness in children. I feel that examining subtypes of aggressive children will be beneficial to all people involved in these children's daily routines: the children themselves, their parents, teachers, peers, and clinicians. Additionally, I hope this research will help foster new intervention strategies that might be tailored to the needs of each subtype of aggressive children.

Method

Participants

The participants in this study come from a larger project, the Prime Time Project. This project is in its fifth year of research, and it is backed by a grant from the Department of Health and Human Services for further continuance. A multi-component intervention program for aggressive children, Prime Time research is conducted in local elementary schools with parental and teacher consent. Fifty-four elementary aged students participated in this study and were designated as aggressive by their teachers using teacher-rating scales and by their peers using sociometric rating scales. The parents of these children, after giving proper consent, were also asked to rate these children on scales of aggressive behaviors. Participation assent was also obtained from the children, and confidentiality of responses was assured.

Materials

The Child Behavior Checklist and Social Competence Scale, or CBCL, was used to obtain raw scores of aggressive behaviors as rated by the children's parents (Achenbach and Edelbrock, 1991). The CBCL consists of 113 items that parents rate on a 3-point scale as not true (score = 0), somewhat or sometimes true (score = 1), or very

true or often true (score = 2). This checklist classifies aggressive behavior into two broad band, internalizing and externalizing, scales and eight more specific narrow band subscales. These eight subscales are the focus of this study and consist of the following types of aggressive behaviors: withdrawn, somatic complaints, anxious/depressed, social problems, thought problems, attention problems, delinquent behavior, and aggressive behavior. These scales have been identified through factor analyses, and interrater agreement and test-retest reliabilities are very good (Achenbach and Edelbrock, 1991).

To attempt to determine the significance of clusters found using the CBCL scores, several additional measures were also used for analysis. Parental acceptance was measured by the Me and My Child Scale (MMC). Items on this measure were culled from two factors of the Parenting Stress Index (PSI) by Abidin, 1990. Scores from the “Reinforcing” factor (6 items) and the “Attachment” factor (7 items) have consistently discriminated between parents of children with and without behavioral and emotional problems, as well as between parents of securely attached and insecurely attached children. The PSI has been researched carefully and extensively, and the items culled from it for the Prime Time project were used to form a composite measure of parental acceptance. (Abidin, 1990, and Hughes, Cavell, & Grossman, 1997).

Teacher ratings were also used for comparison of the clusters. The Teacher Report Form (TRF) by Achenbach, 1991, was selected to index teachers’ perceptions of children’s aggression. Items and scales on the Aggressive Behavior scale of the TRF parallel those on the CBCL. The Teacher Reinforcing Scale (TRS) was also created to assess teachers’ perceptions of the degree to which students were reinforcing to have in the classroom (Cavell & Hughes, under review). Sample items included “I am glad this

child is in my class” and “If this child is absent, I am able to enjoy my class more.” Nine items compose this scale and they are rated on a 5-point Likert-type scale. Consistent with findings that aggressive children are less reinforcing to teachers, TRS scores have been found to be significantly correlated with TRF externalizing scores but not with TRF internalizing scores (Cavell & Hughes, under review).

To examine a child’s ratings of persons in his/her social network with respect to 11 types of social support or conflict, the Network of Relationships Inventory (NRI) was used for further analysis (Furman & Buhrmester, 1985). Ratings are made on a five-point Likert-type scale, and each of the 11 scales contains three items that ask about a specific provision of support within a relationship. Support scores for a given relationship are obtained by summing across the following seven scales: communication, instrumental aid, intimacy, nurturance, affection, admiration, and relative alliance. A negative interaction conflict score is obtained by summing across the conflict and punishment scales (Hughes et al., 1997). The NRI can be used with selected relationships within the child’s social network, and in keeping with the above analyses the mother/stepmother and teacher items were used.

Additionally, the Social Support Appraisals Scale (Appraisal Scale) was chosen to assess a child’s appraisal of support provided by family, teachers, and peers (both classmates and friends) (Dubow & Ullman, 1989; Dubow et al., 1991). The 41 items on the Appraisal Scale ask the degree to which the child feels well-liked by and close to family, teachers, classmates, and friends, and the responses range from 1 = never to 5 = always. In this study, the items pertaining to the child’s appraisal of support from peers, including classmates and friends, was selected for comparison to the CBCL clusters.

The aggressive children's peers also rated their classmates using sociometric classifications and social preference scores determined according to Coie, Dodge, and Coppotelli (1982). These scores lended measures of overt aggressive behaviors, internalizing aggressive behaviors, and social acceptance of their aggressive peers. Children were asked to nominate three children as those they "liked most". In order to avoid asking them to nominate those children "liked least," the children were asked to rate all same-gender children on a 1-5 Likert-type scale with respect to "how much you like to play with this person." A response of 1 indicated "I don't like to" and one of 5 indicated "I like to a lot." In this fashion, as suggested by Asher and Dodge (1986), a rating of "1" was treated as the "like least" nomination. The children's peers were also asked to nominate three classmates who fit a behavioral description as aggressive, i.e., starts fights, as victimized, i.e., is picked on, and also as a leader, i.e., is a good leader (Hughes et al., 1997).

Procedure

The CBCL raw scores I used in this study were collected in a previous study as part of the ongoing Prime Time research. In this study by Edens, Cavell, and Hughes (under review), letters of consent were sent to the parents of aggressive subjects to obtain permission for their child's participation in a program designed to improve children's social behavior and overall self-concept. Additionally, control subjects were also designated and their parents received consent letters for their child's participation in a study researching children's perceptions of themselves and others. The parents of aggressive children who gave participation consent were then visited at home and the program was explained in greater detail and confidentiality assured. These parents then

completed a set of psychometric measures, the CBCL included (Edens et al., under review). The aggressive children were then interviewed at school by trained undergraduate and graduate students and were also given a variety of measures. The CBCL scores used in my study are a subset of the data collected in this larger project.

Results

A two-stage analytic process was applied to the CBCL measure. The first stage of analysis involved cluster analyzing the raw CBCL scores to differentiate subtypes of aggressive children. The second stage of analysis involved comparing the clusters using several different measures to attempt to find clinically significant distinctions among the groups.

Using the cluster analysis program in the SAS statistical program, fifty-four subjects were entered into a cluster analysis. Both Ward's Minimum Variance method and average linkage method of clustering were used to determine the number of clusters. A two-cluster solution was determined by examining the Pseudo F value, Pseudo t-squared value, and the cubic clustering criterion. High values in the Pseudo F results indicate the best cluster solution. Using Ward's method, a two-cluster solution had a Pseudo F value of 32.07, a relatively large result. High values for cubic clustering criterion also indicate a good cluster solution. Again, using Ward's method, the highest cubic clustering criterion value, a -1.0538 , was given for the two-cluster solution. When examining the Pseudo t-squared results, a large jump in numbers often indicates the best cluster solution. The solution precedes the largest jump or skip in numbers. The results of Ward's method indicated that a jump between 6.13 and 32.07 was the largest, and this jump was preceded immediately by the two-cluster solution.

I also examined the cluster results for the use of the average linkage cluster analysis method. The Pseudo F value of 30.50, the cubic clustering criterion value of -1.3259, and the Pseudo t-squared jump between 4.07 and 30.50 indicated that, as in using Ward's method, a two-cluster solution to the cluster analysis was the most appropriate. Because these two methods were complimentary, I will be using the results of Ward's method in reporting the data.

The results determined two clusters of aggressive children in this sample. Cluster 1, which consisted of 23 children, contained higher means for each subscale of the Child Behavior Checklist (Achenbach and Edelbrock, 1991). These means, standard deviations, maximum values, and minimum values are summarized in Table 1. These children are described by their parents as being more aggressive. Cluster 2, which consisted of 31 children, is described by their parents as being the least disordered or aggressive of the sample. They have relatively normal means, and are described as having better relationships with their parents as indicated by their scores on the CBCL. The means, standard deviations, maximum values, and minimum values of Cluster 2 are summarized in Table 2.

The results of the cluster analysis indicate differences in the cluster variables, but in order to determine the clinical significance of the results additional statistical procedures were performed.

A MANOVA testing for differences between the two cluster groups on the CBCL scores was conducted for descriptive purposes to see the degree of difference between the two groups on the clustered variables. The test was significant, $F(8, 45) = 16.10, p < .01$. Univariate tests for each scale were also significant (see Table 3).

To examine the validity of these two cluster groups, comparisons were made across additional measures completed by parents, teachers, peers, and the aggressive children. Specifically, the parents' reports of how accepting they were of their children were examined, along with ratings of acceptance by teachers and peers. Teachers and peer-rated externalizing and internalizing behavior were also compared. Finally, children's own views of how accepted they were by parents, teachers, and peers were compared. Table 4 presents the measures and F values from these comparisons.

Results indicated only two differences between the cluster groups across the 10 criterion variables. These differences were found in the MMC and peer externalizing variables. In both, subjects in cluster 1 were rated as showing greater impairment or disorder. No other significant differences emerged.

Discussion

I predicted discovering three clusters of aggressive children with higher means in each of three subscales of the CBCL: anxious/depressed, attention problems, and aggressive behavior (Achenbach and Edelbrock, 1991). The cluster analysis revealed two clusters, but the clusters were joined in a manner different than I predicted. The two clusters were formed according to their means on each of the eight subscales, or into a cluster with high means on the CBCL and a cluster with relatively normal means on the CBCL. The implications of these results are quite interesting and questionable.

The parents of the children in Cluster 1 clearly indicate that they agree with the teacher and peer nominations. In their parents' eyes, these children differ from the children in Cluster 2 because their mean scores on the CBCL are higher across the eight subscales. These children are rated as more aggressive by their parents.

Could the parents of these aggressive children in Cluster 2, the cluster with the relatively normal mean scores on the CBCL, be in denial about their children's aggressive behavior? These children were included in the Prime Time Project because their teachers and their peers nominated or designated them as "aggressive". Because the parent ratings do not agree with this label, possibly their parents either disagree with the teacher and peer nominations or feel that their child's behavior is relatively normal by their standards. Are these children possibly "misidentified" as aggressive, or are their parents' reports of their behavior more valid than their teachers' and peers' evaluations?

The only significant comparisons between the clusters and other measures of these same subjects' aggression were found in their mother's ratings of acceptance of the child (MMC) and in their peers' ratings of overt aggression (sociometric data/externalizing). All other comparisons were discovered to be clinically non-significant.

This research does indicate that subtypes or subgroups of aggressive children do exist within a subject population. However, because of the difference in mean scores on the CBCL between the two groups, it does lead to questioning the validity of parent reports. These differences, or subtypes, seem only to exist in the eyes of the parents. This finding raises questions about the role of parental perceptions of child behavior. According to Dishion, Patterson, and Kavanaugh (1992), it "seems likely that the parent's immediate social context is critically important in determining the kinds of child behavior to which they attend, their sense of the normalcy of the behavior, and level of distress (vis-a-vis social support) concerning their children's functioning." In other words, parents may be strongly biased by the context in which the behavior occurs rather than

the actual behavior of the child. Possible explanations could also be that the child does perform differently in various social contexts or settings, such as being aggressive at school in order to receive more attention and being more subdued at home in order to not attract attention, etc. In such a case, the parent might not be aware of behavior in other contexts. These possibilities suggest that the subtypes discovered may actually be subtypes of parents of aggressive children, rather than of aggressive children themselves.

Future research could be directed to examine different measures of parent reports of aggressive behaviors apart from the CBCL. Additionally, a companion study comparing these subjects' scores on the Teacher Report Form (TRF) (Achenbach and Edelbrock, 1991) to find the same subjects in the same clusters would add validity to the existence of the subgroups and the parent ratings in this study.

Limitations of this study include the relatively small sample size, fifty-four subjects, which limits the statistical significance and effect size of this study. The amount of time passage between the collection of the data and the cluster analysis might also be considered an experimental limitation. This data was collected at the beginning of the Prime Time Project, which is now in its fourth year of research, and the analysis conducted in Spring of 1998, which might make results outdated. A repetition of this experimental design performed using the new and the older data set from the Prime Time Project would yield more recent results that could benefit the current subgroups of aggressive children participating in the school intervention program.

In conclusion, this study did agree in part with my original hypothesis. Clusters or subtypes of different aggressive children were found in the data set from the Prime Time Project. Instead of finding the three subtypes I predicted, however, the subgroups

revealed two distinct types of aggressive children. Specifically, those children who were rated high in aggressive behaviors by their parents and those children who were rated relatively normal in aggressive behavior by their parents were discovered. Questions regarding the validity of parent ratings in determining these subtypes have been raised, however. This study will hopefully yield more work in this area of subtypes of aggressive children, as well as in the area of validity of parent ratings of children's aggressive behavior.

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Table 1

Means, Standard Deviations, Maximum Values, and Minimum Values for Cluster 1 on each of the Eight Subscales of the Child Behavior Checklist

Subscale	M	SD	Max	Min
Withdrawn	63.61	5.95	81.00	57.00
Somatic Complaints	59.17	8.16	82.00	50.00
Anxious/ Depressed	67.61	7.74	88.00	52.00
Social Problems	67.57	6.89	82.00	56.00
Thought Problems	67.65	12.61	97.00	50.00
Attention Problems	71.26	8.26	92.00	60.00
Delinquent Behavior	69.13	7.90	82.00	54.00
Aggressive Behavior	75.61	11.73	99.00	60.00

Note. The number of children in this cluster is N=23.

Table 2

Means, Standard Deviations, Maximum Values, and Minimum Values for Cluster 2 on each of the Eight Subscales of the Child Behavior Checklist

Subscale	M	SD	Max	Min
Withdrawn	54.68	6.76	78.00	50.00
Somatic Complaints	55.48	5.44	67.00	50.00
Anxious/ Depressed	53.06	4.64	72.00	50.00
Social Problems	56.32	5.97	73.00	50.00
Thought Problems	55.90	6.14	70.00	50.00
Attention Problems	58.48	7.40	78.00	50.00
Delinquent Behavior	57.13	6.26	72.00	50.00
Aggressive Behavior	57.23	6.59	78.00	50.00

Note. The number of children in this cluster is N=31.

Table 3

Means, Standard Deviations, and F Values for Clustered Variables by Cluster Group

Subscale	Cluster 1		Cluster 2		F*
	M	SD	M	SD	
Withdrawn	63.61	5.95	54.68	6.76	25.47
Somatic Complaints	59.17	8.16	55.48	5.44	3.97**
Anxious/ Depressed	67.61	7.74	53.06	4.64	70.71
Social Problems	67.57	6.89	56.32	5.97	41.04
Thought Problems	67.65	12.61	55.90	6.14	20.46
Attention Problems	71.26	8.26	58.48	7.40	35.65
Delinquent Behavior	69.13	7.90	57.13	6.26	38.75
Aggressive Behavior	75.61	11.73	57.23	6.59	53.60

Note. The number of children in Cluster 1 is N=23 and in Cluster 2 is N=31.

*For F values, (df = 1, 52)

**p < .05

Table 4

Means, Standard Deviations, and F Values for Criterion Variables by Cluster Group

Variable	Cluster 1		Cluster 2		F*
	M	SD	M	SD	
<u>Teacher Ratings*</u>					
Externalizing	70.26	7.43	67.63	6.64	1.75
Internalizing	57.13	10.04	55.67	10.28	0.26
Acceptance	3.87	1.19	4.20	1.34	0.86
<u>Peer Ratings*</u>					
Externalizing	1.86	1.09	1.26	1.10	3.95
Internalizing	0.07	0.88	0.10	1.03	0.02
Acceptance	-0.57	0.99	-0.35	1.14	0.54
<u>Child Ratings*</u>					
Mother acceptance	4.41	0.47	4.15	0.90	1.60
Teacher acceptance	3.73	0.87	3.82	0.87	0.14
Peer acceptance	4.03	0.99	4.13	0.83	0.15
<u>Mother Ratings**</u>					
Acceptance	3.69		4.13		5.17

Note. The number of children in Cluster 1 is N=23 and in Cluster 2 is N=31, (df=1,52), and $p < .05$.

*MANOVA testing performed on these measures (TRF, TRS, NRI, sociometrics)

**ANOVA testing performed on this measure (MMC)