

**Relations Among Achievement, Self-Concept, and Achievement
Attributions for Young School Children**

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Previous research has shown that the causes children attribute their successes and failures to such as ability, effort, and luck are related to self-concept, school performance and other academic behaviors (Bar-Tal, 1978; Covington, 1984; Marsh, Cairns, Relich, Barnes, & Debus, 1984; Weiner, 1979). Although much research has been done to establish these relationships, their precise nature is still debated, particularly as they pertain to very young children.

In this project, the development of self-concept and academic attributional style in children who are just beginning their formal schooling was investigated. Attributional style is a construct that identifies the causes children point to as reasons for success and failure. Children can either indicate internal or external reasons and stable or unstable reasons. The descriptors, "internal/external" and "stable/unstable" refer to the child's locus of control, a related construct that is regarded more as a personality characteristic from which attributional style develops. For example, "I do bad in math because math is too hard for me" is an internal, stable cause, referring to a lack of ability and "I don't remember the story because I wasn't paying attention" is an internal, unstable cause. In contrast, "I do bad in school because the teacher doesn't like me" is an external cause referring to the influence of powerful others.

Lefcourt (1991) described locus of control as a personality characteristic that accounts for why some people are motivated to succeed in the face of challenge, while others fall prey to negativity and defeatism. Attributional style stems from locus of control research (Marsh, 1984). Attributional researchers typically place more emphasis on particular perceived causes of success and failure (e.g., ability, effort, powerful others) as well as the impact of various situational variables. Marsh (1984) pointed out that this emphasis on situational variables leaves in question whether the theoretical constructs in this research also apply to dispositional differences in subjects' perceptions of their own behavior. This distinction between dispositional and situational research may be key to unraveling much seemingly contradictory data in attributional research.

Self-Concept and Attributional Style

In earlier research into self-concept, children under the age of eight were believed to not have the required cognitive abilities to comprehend and respond to psychological characteristics and, therefore, were unable to form meaningful self-concepts (Ruble & Dweck, unpublished manuscript). However, more recent research suggests that children as young as three and four years old do form psychological self-conceptions and also show similar motivational patterns present in older children (Ruble & Dweck, unpublished manuscript).

One such motivational pattern is that of the helpless child, who is characterized by low expectations, negative affect,

low persistence and a lack of constructive strategies when faced with failure outcomes (Ruble & Dweck, unpublished manuscript). The developmental differences in this pattern revolve around a global construct of goodness versus badness compared to the more precise smart versus not smart distinction made by older children displaying this pattern (Heyman, Dweck & Cain, 1992). The helpless pattern in young children (i.e., pre-kindergarten through first grade) has been shown to be directly linked to their beliefs about the self.

The helpless motivational pattern is only one of several such patterns that have been examined. Ruble, Eisenberg, and Higgins (1994) reported on the tendency for some individuals to exhibit a completely opposite pattern. In this motivational pattern, children believe themselves capable of success, even in the face of failure. Ruble et al. (1994) identified evaluative biases in children ages 5 to 10 years, which were indicated by more positive evaluations for the self than another child, especially after a failure. Older children exhibited a greater bias for general ability attributions, while younger children were more likely to show a bias for specific performance evaluations. A similar trend to that observed in self-concept has been found in the development of attributional style. This was documented by Gyato and Tishelman (1993) who found that learning disabled children displayed this helpless style, independent of achievement behavior. They also found a general gender difference, with girls displaying a helpless style as it

pertains to effort, and that they were less likely than boys to seek challenging tasks.

Related studies have shown that as children mature, their self-concept tends to become more realistic, correlating more closely with their actual achievement (Marsh, 1984). Studies on academic attributions, however, have shown an opposite trend in young children (Wigfield, 1988). At ages 5, 6, and 7 years, children typically have not yet learned to adopt an ego-protective strategy that older children and adults readily employ. In this motivational pattern, successes are attributed to internal factors (e.g., ability or effort) and failures to external factors (e.g., story was too long, teacher is against me, material designed for older kids).

Influence of Educational Setting and Instructional Style

Kistner (1988) pointed out that the instructional style employed in the classroom and the attributional style of LD children can interact in various ways. For example, children with external attributional styles flourished in very structured, directive classrooms (Pascarella & Pflaum, 1981). In addition, LD children, who were rated by teachers as showing the most appropriate classroom behavior and who made the greatest gains in achievement, attributed their failures to variant, but controllable causes.

Given these results, Garden Oaks and Oak Forest Elementary Schools in Houston offer unique opportunities to study attribution and self-concept constructs in young children because

they employ both mixed-age and traditional age-graded classrooms. Mixed-age early education programs are typically implemented under the philosophy that children progress through social, emotional and physical stages on individual bases (Katz, 1991). Rates of developmental maturation as well as previous experience may contribute to these differences. These types of classrooms are less structured, allow free movement of children in the classroom, and also allow children to choose the kinds of tasks on which they wish to work. The typical age-graded structure of schools, however, emphasizes individualized learning to a lesser extent and is often very structured. The goal in these classes is to move the students along at relatively the same speed and graduate all students on to the next level at the same time.

The Montessori program at Garden Oaks and the Primary Learning Community program at Oak Forest were designed to provide a highly interactive environment where children are grouped not solely according to grade, but on other characteristics such as learning styles, rate of task completion and reading level. This allows students to proceed at their own individualized rates. For children who are either somewhat behind or ahead of other classmates, this focus on individualized learning may serve an ego-protective function, making deviance from the norm less obvious. Differences in attributional style between the two classroom types were explored.

The multi-age/grade structure of such classrooms also fosters leadership roles, helping behavior and peer role models

for children of different ages (Ricard, Heffer, & Miller, 1994). This emphasis on peer-assisted learning encourages specific skills and abilities that are not tapped in traditional classrooms. The students in these classrooms must learn how to communicate with their peers in a productive manner to be able to assist one another. To seek help from knowledgeable peers, children must possess realistic knowledge about their own and their classmates abilities in particular academic areas. The literature suggests that motivation plays a role in the accuracy of children's judgements about peers' abilities (Droege & Stipek, 1993; Feldman & Ruble, 1988).

Developmental Patterns

Marsh (1984) indicated, in his seminal work on the topic of self-attributions, that children who attribute academic success to internal factors and failure to external factors have both better academic self-concepts and better academic achievement. This has been called an ego-protective motivational pattern. In contrast, Wigfield (1988) suggested that young children do not yet engage in this ego-protective strategy to the same extent as adults. He found developmental differences with younger children referring more to luck, failing to make a specific-general distinction, but also taking more responsibility for failures than was expected. We were interested in investigating this phenomenon in very young school children. Droege and Stipek (1993) suggested that young children see academic and social skills as stable characteristics that cannot be improved with

effort. In other studies, however, effort was seen by students as a favorable characteristic that encouraged likability by peers (Juvonen & Murdock, 1993). The inconsistencies in this literature probably represents a developmental trend, with younger children seeing academic and social skills as more stable than older children.

Developmental differences also were found in previous studies investigating domain-specificity of attributions. Marsh et al. (1984), using 5th graders, observed that attributions were not necessarily stable across academic domains for ability attributions. Stipek and Daniels (1990) indicated that kindergarteners did not make these distinctions. If a child was rated high in one area, such as math, the child was also rated high in all situations mentioned, even those irrelevant to math. The focus of mixed-age classrooms on peer-assisted learning may foster motivation for domain-specific attributions that assists children in seeking out knowledgeable peers for help in specific academic domains.

Purpose of the Present Study

In this study, we investigated the degree to which young students attribute success and failure to external factors rather than internal ones. We investigated the interface of two related constructs, locus of control and attributional style by narrowing our focus to an internal/external and stable/unstable frame of reference, while allowing for the exploration of specific causes within this framework. Of particular interest was the nature of

children's beliefs about the stability of their own abilities and how attributional style was expected to vary developmentally among kindergarteners through second graders. The extent to which more mature attributional styles develop among the young children directly exposed to different aged classmates was investigated through comparison of responses of students in mixed age versus traditional same-age classrooms. We hoped to predict actual achievement (i.e., standardized test scores) from perceptions of abilities (i.e., self concept scores) and the cognitions underlying these perceptions (i.e., attributional style scale scores). The role of effort, stability and externality in students' attributions for success and failure were also investigated.

Hypotheses

1. The correlation between subjects' scores on a measure of achievement and a self-concept scale will be more related with increasing age, demonstrating a more realistic self concept.
2. Children in mixed-age classrooms will be more likely to attribute success to internal factors, such as effort and ability, and failure to external factors, relatively independent of actual achievement.
3. Subjects in traditional, same-age classrooms will be less likely to attribute success to internal factors and failure to external factors, correlating closely to actual achievement.

4. As an alternative strategy for understanding attributional style, subjects were also reclassified to reflect either a helpless (Gyato & Tishelman, 1988) or an ego-protective (Marsh, 1984; Wigfield, 1988) pattern. Specifically we anticipated that children who externalized success (i.e., located the causes outside their personal control) and internalized their failures (i.e., blamed their own personal lack of ability or effort) would have lower achievement scores than children who internalized success (i.e., attributed them to their own high ability or effort) and who externalized their failures (i.e., attributed them to people or events outside their control).

Method

Subjects

Subjects ($n=169$) were kindergarten through second grade students at two elementary schools in Houston. As shown in Table 1, 69 of the subjects were students in either the Montessori mixed-age program ($n=32$) at Garden Oaks Elementary School, or the Primary Learning Community (PLC) mixed-age program ($n=40$) at Oak Forest Elementary School. The other participants ($n=97$) were enrolled in more traditional, age-graded classrooms at Garden Oaks School. Two of the three Montessori classes at Garden Oaks and all of the PLC classrooms at Oak Forest were composed of roughly the same numbers of kindergarteners, first graders and second graders. One Montessori class at Garden Oaks was composed of 3-, 4-, and 5-year olds; only the 5-year-old students

in these classes were included in this study. The sample was ethnically diverse, with 48% European American, 29% Hispanic American, 21% African-American, and 2% Asian American. Students also were heterogeneous with regard to socioeconomic status, with 32% of the students qualifying for free or reduced lunch.

Insert Table 1 about here

Parental permission was obtained for all participants in this project, and information sessions were held during Parent-Teacher Organization meetings to answer any additional questions from parents or teachers.

Measures

Demographic characteristics. School records were used to obtain students' age, grade, gender, socioeconomic status, and ethnicity.

Achievement. Academic achievement scores were obtained from the Wescheler Individual Achievement test: Screener (WIAT; The Psychological Corporation, 1992). The WIAT is an individually administered test of academic achievement that yields standardized achievement scores for the academic domains of reading, spelling, and mathematics skills. WIAT age-based norms were used to generate standard scores with a mean of 100 and a standard deviation of 15.

Self-concept. The Self-Description Questionnaire (SDQ; Marsh, 1990) is a well-standardized self-report instrument that

measures children's academic, nonacademic, and general self-concept. The SDQ is comprised of 76 items that assess children's perceptions about their personal functioning in a variety of domains. For the purposes of this study the SDQ was abbreviated to 52 items, including only those items relevant to subjects' self-concept about reading, mathematics, general school, and general self. SDQ standard scores have a mean of 50 and a standard deviation of 10.

Attributional style. Subjects' beliefs about the causes of their own academic success and failures were assessed using the Modified Individual Achievement Responsibility Questionnaire-Revised (MIARQ-R) an 8-item forced-choice format questionnaire, adapted for this study from the Modified Individual Achievement Responsibility Questionnaire (MIARQ); Ringelheim, Bialer, & Morissey, 1970). The MIARQ is based on the Individual Achievement Responsibility Questionnaire (IARQ); Crandall, Katkovsky, & Crandall, 1965) and has appropriate language for mentally retarded children with mental ages ranging from 4 to 12.

Insert Figure 1 about here

As shown in Figure 1, the simple language of the MIARQ was adopted for the MIARQ-R, with changes in phrasing of the questions to make them relevant to subjects' educational experiences in their primary classrooms. The MIARQ-R provides scores for three scales: (a) internal attributional style (vs.

external, such as powerful others), (b) internal, stable attributional style (i.e., individual ability), and (c) internal, unstable attributional style (i.e., individual effort). The scale scores were developed using a conditional probability approach. The proportion of responses corresponding to a particular category were divided by the opportunities the subject had to select different attributional responses, as defined by the scales. MIARQ-R items 3, 4, 7, and 8 provided internal versus external choices and items 1, 2, 5, and 6, offered internal ability versus internal effort options.

To assess the ego-protective and helpless attributional patterns the following procedure was used: If the students endorsed those items that dealt with success (items 4 and 7) with an internal response and those items that dealt with failure (items 3 and 8) with an external response, they were identified as demonstrating the ego-protective strategy. If they endorsed the success items with an external response and the failure items with an internal response, they were identified as exhibiting a helpless pattern. Those students who did not endorse the items in either of these patterns were identified as unclassified and were not included in the analysis.

Procedure

Students for whom parental permission was obtained were escorted by a research assistant to a room on the Garden Oaks or Oak Forest campuses during the course of a regular school day. The assistant worked one-on-one with the subject to collect data,

using a structured interview format. Approximately two 30-minute sessions were needed per subject to collect the data. All research assistants were trained to collect the data in a consistent manner, to interact appropriately with the subjects, and to keep interference with the classrooms to a minimum.

The assistant first described to the subject the kinds of tasks that they would be working on together and the content of the consent form signed by the parent. Confidentiality was emphasized in terms that could be understood by children this age. After answering any questions the subject had, the assistant asked for the child's cooperation, and once obtained, proceeded with the testing session.

During testing, frequent praise for cooperation was offered and reward "stickers" were given at regular intervals. Short breaks were taken when necessary. Subjects were encouraged to ask questions whenever they were unsure of what they were being asked. Following testing, subjects were escorted back to the classroom by the assistant.

Results

Correlations Among Achievement, Self-Concept, Attribution

To explore the relations among achievement, self-concept, and attributional style, a correlation matrix was generated for the four WIAT scores, five SDQ self-concept scores, and three primary attribution scores (i.e., internal, internal-ability, and internal-effort). As anticipated, scores within each of the areas (i.e., achievement, self-concept, and attribution) generally were intercorrelated across classroom type (i.e., mixed-age vs. same-age) and grade.

For kindergarteners in mixed-age classrooms, internal attribution scores were positively correlated with reading ($r=.53$, $p=.02$), mathematics ($r=.67$, $p=.002$), and comprehensive ($r=.51$, $p=.03$) achievement scores. Internal-effort scores also were positively correlated with reading ($r=.49$, $p=.04$), mathematics ($r=.51$, $p=.03$), and comprehensive ($r=.46$, $p=.05$) achievement scores. In addition, internal scores were negatively correlated with general school ($r=-.47$, $p=.05$) and general self ($r=-.47$, $p=.05$) self-concept scores. No correlations of interest emerged for first graders in mixed-age classrooms. For second graders in mixed-age classrooms, mathematics self-concept scores were positively correlated with internal-effort scores ($r=.46$, $p=.04$) and negatively correlated with internal-ability scores ($r=-.52$, $p=.02$) and spelling achievement scores ($r=-.48$, $p=.04$).

A different pattern of correlations emerged for subjects in same-age classrooms. Specifically, for kindergarteners in same-

age classrooms, internal-ability attribution scores were negatively correlated with reading ($r = -.44$, $p = .03$), mathematics ($r = -.39$, $p = .05$), and general school ($r = -.43$, $p = .03$) self-concept scores. For first and second graders, internal-effort scores were positively correlated with reading (1st: $r = .43$, $p = .02$; 2nd: $r = .45$, $p = .007$), spelling (1st: $r = .38$, $p = .05$; 2nd: $r = .48$, $p = .003$), mathematics (1st: $r = .32$, $p = .05$; 2nd: $r = .37$, $p = .03$), and comprehensive (1st: $r = .40$, $p = .03$; 2nd: $r = .55$, $p = .0007$) achievement scores. In contrast, for first and second graders, internal-ability scores were negatively correlated with reading (1st: $r = -.30$, $p = .03$; 2nd: $r = -.50$, $p = .003$), spelling (1st: $r = -.35$, $p = .05$; 2nd: $r = -.44$, $p = .01$), mathematics (1st: $r = -.34$, $p = .05$; 2nd: $r = -.50$, $p = .003$), and comprehensive (1st: $r = -.40$, $p = .03$; 2nd: $r = -.35$, $p = .01$) achievement scores. Other significant relations of interest for first and second graders included positive correlations between reading self-concept scores and reading (1st: $r = .37$, $p = .04$; 2nd: $r = .45$, $p = .007$) and spelling achievement scores (1st: $r = .42$, $p = .02$; 2nd: $r = .51$, $p = .002$).

Mixed-Age versus Same-Age Classroom Group Differences

To interpret normative levels of student achievement, WIAT Reading, Mathematics, and Spelling subtest scores and WIAT Comprehensive (i.e., summary) score were compared to the appropriate age-based norms. As shown in Table 2, means for the achievement scores indicated that students were functioning within the average range across mixed-age and same-age classrooms.

Insert Table 2 about here

To investigate mixed-age versus same-age classroom group differences on the four achievement scores, a 2 (classroom) x 2 (gender) x 3 (grade) MANOVA was completed. As expected, the MANOVA, using Wilk's *lambda* criterion, indicated no significant main effects for classroom, gender, or grade and no significant interactions.

To investigate mixed-age versus same-age classroom group differences on the five self-concept scores, a 2 (classroom) x 2 (gender) x 3 (grade) multivariate analysis of variance (MANOVA) was completed. The MANOVA, using Wilk's *lambda* criterion, indicated no significant main effects for classroom or grade and no significant interactions. However, a main effect for gender *approached* significance [$F(5,148)=2.15$, $p= .06$, $lambda=.93$]. Means and standard deviations for the five self-concept scores by classroom type and grade are provided in Table 3.

Insert Table 3 about here

Due to the exploratory nature of using the SDQ with children in the sample's age range (i.e., only Marsh, Craven, & Debus, 1991 has done so), a decision was made to attempt interpretation of the gender main effect. The resultant one-way ANOVAs revealed significant main effects for gender on the general self

[$F(1,152)=8.11$, $p=.005$, $\eta^2=.05$], the reading [$F(1,152)=7.07$, $p=.009$, $\eta^2=.04$], and general school [$F(1,152)=4.50$, $p=.04$, $\eta^2=.03$] self-concept scores. Main effects for gender on the mathematics score *only approached* significance [$F(1,152)=3.22$, $p=.009$, $\eta^2=.07$] and the main effect for gender on the peer relationships score was nonsignificant.

To clarify the significant gender differences in self-concept scores, a Least Squares Means comparison procedure was conducted. Compared to boys, girls reported significantly higher general self concept (girl $M=52.31$ vs. boy $M=47.78$, $p=.005$), reading self concept (girl $M=52.05$ vs. boy $M=47.78$, $p=.009$), and general school self concept (girl $M=51.81$ vs. boy $M=48.40$, $p=.04$) scores.

To investigate mixed-age versus same-age classroom group differences on the three primary attributional style scores (i.e., internal, internal-ability, and internal-effort), a 2 (classroom) x 2 (gender) x 3 (grade) MANOVA was completed. The MANOVA, using Wilk's *lambda* criterion, indicated no significant main effects for classroom or gender and no significant interactions. However, a significant main effect for grade was obtained [$F(6,302)=3.97$, $p=.0008$, $\lambda=.86$]. Means and standard deviations for the three attribution scores by classroom type and grade are provided in Table 4.

Insert Table 4 about here

Inspection of the resultant one-way ANOVAs revealed significant main effects for grade on the internal score [$F(2,153)=6.44$, $p=.002$, $\eta^2=.07$] and the internal-ability score [$F(2,153)=6.41$, $p=.002$, $\eta^2=.07$]. The grade main effects for the internal-effort score was nonsignificant.

To clarify the significant grade differences in the internal and internal-ability attributional scores, a Least Squares Means comparison procedure was conducted. Kindergarteners ($M=40.50$) responded in a significantly ($p=.001$) more internal (vs. external) style than second graders ($M=26.24$) and first graders ($M=36.90$) responded in a significantly ($p=.006$) more internal (vs. external) style than second graders. In addition, kindergarteners ($M=56.77$) responded in a significantly ($p=.0007$) more internal, stable (i.e., individual ability) style than second graders ($M=37.26$) and first graders ($M=50.42$) responded in a significantly ($p=.01$) more internal, stable (i.e., individual ability) style than second graders.

To investigate group differences for achievement between ego-protective and helpless attributional style, independent of mixed-age versus same-age classroom type, a 2 (attributional style) x 3 (grade) ANOVA was completed on the WIAT Comprehensive score. Only subjects clearly classified in the attributional style categories were included in the analyses; unclassified subjects ($n=69$) were excluded. Although a main effect for grade and a grade by attributional style interaction were nonsignificant, a significant main effect for attributional style

was observed [$F(1,94)=7.74$, $p=.007$, $\eta^2=.07$].

To clarify the significant difference in achievement for the ego-protective and helpless attributional style groups, a Bonferoni (Dunn) t -test was conducted. As shown in Table 5, the mean achievement score was significantly ($p=.05$) higher for the ego-protective style group.

Predictors of Achievement

To explore the relations among academic achievement, self-concept, and attributional style, a series of regression analyses were conducted on the WIAT Comprehensive score with grade, gender, classroom type, self-concept scores, and attribution scores as predictors. Regression analysis was first performed on achievement with grade, gender, and self-concept scores (i.e., reading, mathematics, general school, general self, and peer relationships) as predictors. The resultant model was statistically significant [$F(8,147)=4.25$, $p=.0001$, $R^2=.19$, Adjusted $R^2=.14$] and yielded a medium effect size (Cohen, 1988). Significant predictors of achievement were gender ($p=.05$, $\beta=-.15$), reading self-concept ($p=.0001$, $\beta=.44$), and peer relationships self-concept ($p=.005$, $\beta=-.33$).

Next a series of separate regression analyses were performed on achievement (WIAT Comprehensive score) with grade, gender, and each of the primary attribution scores as predictors (i.e., one regression model for each of the internal, internal-ability, and internal-effort scores). The regression model using the internal score was statistically significant [$F(4,156)=2.28$, $p=.05$,

$R^2=.06$, Adjusted $R^2=.03$] and yielded a small effect size (Cohen, 1988). The only significant predictors of achievement was gender ($p=.02$, $\beta=-.19$). The regression model using the internal-ability score was statistically significant [$F(4,156)=3.07$, $p=.02$, $R^2=.08$, Adjusted $R^2=.05$] and yielded a small effect size (Cohen, 1988). Significant predictors of achievement were gender ($p=.02$, $\beta=-.18$.) and internal-ability score ($p=.03$, $\beta=-.18$). The regression model using the internal-effort score was statistically significant [$F(4,156)=3.08$, $p=.006$, $R^2=.09$, Adjusted $R^2=.07$] and yielded a small effect size (Cohen, 1988). Significant predictors of achievement were gender ($p=.02$, $\beta=-.19$.) and internal-effort score ($p=.006$, $\beta=.22$).

A final series of separate regression analyses were performed on achievement (WIAT Comprehensive score) with grade, gender, and each of the primary attribution scores as predictors (i.e., one regression model for each of the internal, internal-ability, and internal-effort scores). In these analyses, three regression models were generated for subjects (a) classified as demonstrating an ego-protective attributional style, (b) classified as demonstrating a helpless attributional style, and (c) unclassifiable on these dimensions. The only model to achieve statistical significance was the one that predicted achievement for unclassified subjects using grade, gender, classroom type, and the internal attribution score [$F(4,52)=3.24$, $p=.02$, $R^2=.20$, Adjusted $R^2=.14$], yielding a medium effect size (Cohen, 1988). Significant predictors of achievement were gender

($p=.05$, $\beta=-.27.$) and the internal score ($p=.01$, $\beta=.37$).

Discussion

This study investigated developmental patterns in attributional style and self-concept as predictors of academic achievement in children just beginning their formal education. Various attributional styles were identified as emerging personality characteristics and to gain greater understanding of the development of these constructs in very young children.

A correlation between subjects' scores on an achievement measure and a self-concept measure was expected to be more associated with increasing age, showing a more realistic self-concept (Marsh, 1994).

Students with both ego-protective and helpless attributional styles were identified. It was expected that students demonstrating an ego-protective attributional style would show a positive correlation with achievement and a more positive self-concept than those students who do not show the ego-protective strategy. Students who demonstrated the helpless attributional style were expected to have lower achievement scores and lower self-concept scores than those who did not display this pattern. Students in the more traditional, same-aged classrooms were expected to be less likely to show an ego-protective strategy that correlates closely to their actual achievement.

Achievement scores of the sample were compared with normative data and were found to be well within the average range for both the group as a whole and within each classroom type. As

anticipated, no differences in achievement between classroom types were found.

When the mixed-age and same-age classes were compared on the five self-concept scales, no differences were found. There were also no group differences found across grade levels. However, a gender effect for self-concept did approach significance and due to the few precedents available in using this scale with this age group, possible differences were investigated. Boys and girls were found to differ on their self-concept ratings for general self, reading, and general school with girls scoring significantly higher on each of these than boys. The math and peers self-concept, however, were found to be comparable. These findings are consistent with well-documented developmental trends in self-concept and school adjustment (Fergusson, Lloyd, & Horwood, 1991).

In regards to attributional style, group differences were investigated using the three primary subscales: (a) the internality/externality subscale, (b) the internal-stable (i.e., ability) subscale, and (c) the internal-unstable (i.e., effort) subscale. No differences between class type or gender were found for the three scales. However, a significant difference did appear for grade level in the internality/externality scale and the internal-stable (i.e., ability). No differences between grades were found, however, for the internal-effort attributions. It was found that both kindergarteners and first graders responded in a significantly more internal style than the second

graders. The same was true for ability attributions, with the younger children significantly more likely to refer to ability when given the chance than second graders. These findings support Wigfield's (1988) findings that younger children took more responsibility for outcomes, particularly failures, than was expected. This also supports findings that the eighth year is a critical time period for the development of psychological perceptions (Ruble & Dweck, unpublished manuscript). The lack of grade level differences for the effort scale also supports Droege and Stipek's (1993) findings that young children viewed both academic and social skills as stable characteristics that could not be improved with effort.

The two specific attributional style, ego-protective and helpless, were examined for group differences, and were found to be equally distributed among the grade level. This did not include those subjects who fell into neither category. These findings contradict Wigfield (1988) in which the ego-protective style was not evident in young children. However, the results corroborate Heyman, Dweck and Cain (1992), who identified a helpless pattern in young children that revolved around a global good versus bad construct.

A grade by attributional style interaction was investigated, but not found. However, a main effect for attributional style was obtained. Upon further examination it was found that those students who displayed an ego-protective attributional style had significantly higher achievement scores than those students who

displayed a helpless pattern. These findings are in line with Marsh's (1984) findings for better academic self-concepts and academic achievement for those students who displayed an ego-protective strategy. This makes intuitive sense when literature that identifies self-concept as a major predictor of academic achievement is considered (Marsh, 1984). It follows that those students who take pains to guard their self-concept will have higher academic achievement than those students who actively try to sabotage their own personal role in their achievement outcomes.

Subjects' grade level, class type, gender, five scores of self concept, and attributional scores were considered as predictors of overall achievement. Using a model that took into account grade level, gender, and self-concept; gender, reading self-concept and peer relations self-concept were found to be significant predictors of academic achievement. The internality/externality scale was added to the above model, but was not predictive of achievement.

In looking at the specific attributional patterns as predictors of achievement, the lack of an ego-protective strategy was found to be predictive of achievement, even though the ego-protective strategy itself did not predict achievement. This is most likely because of the small number of subjects who displayed this strategy. For those students not actively guarding their ego, reading and peer relationship self-concepts were found to be significant predictors of success when taking into account

gender, grade level, class type and self-concept.

Developmental and group differences for attributional responses self-concept responses, and achievement were investigated. For kindergarteners in the mixed-age classrooms, those children who displayed a more internal versus external attributional style also had higher reading, math and total achievement. Similarly those students who were more likely to choose effort over ability as reasons for success and failure had higher reading, math, and overall achievement. This trend was not found for kindergarteners in the same-aged classrooms, but is supported by Craven, Marsh, and Debus (1991) who demonstrated how internally focused performance and attributional feedback boosted low self-concept by increasing effort attributions in success situations.

A trend also emerged for the more externalizing students to show better self concept in the school and self domain. This represents the divergence of actual achievement and self-concept that was expected in the mixed-age format.

This divergence was not found for kindergarteners in the same-aged classrooms. A negative correlation was found between the tendency to choose stable-ability causations and school, math and reading self-concepts. This possibly suggests a lack of an ego-protective strategy at work in these classrooms. It follows that kindergarten-aged children are at a developmental stage where there are multitudes of skills to acquire. Many children face numerous successes and failures at this age. If a child has

a strong propensity to believe these successes and failures heavily dependent on his or her own innate abilities, they are likely to feel discouraged and to show a lowered self-concept. The absence of this trend in the mixed-age classrooms suggests that the setting is protective in regards to self-concept.

The patterns observed in the mixed-age kindergarteners did not translate to the mixed-age first graders, representing a developmental difference. The mixed-age second-graders demonstrated a positive correlation between the tendency to make attributions pointing to high effort and math self-concept. Similarly, the tendency to see successes and failures as results of their own ability led to lower math self-concepts. The two effects concur to suggest that effort and ability attributions are polarized with regard to these second graders' math self-concepts.

First and second graders in the same-aged classrooms showed some similarities. For both, effort attributions were positively correlated for all achievement scores. This follows documented developmental trends (Droege & Stipek, 1993) which report that younger children see academic and social skills less amenable to change with effort. It differs from Droege & Stipek (1993) in that they suggested that not until the sixth grade could children believe that these attributes could be influenced by effort. So it seems that effort is highly related to children's perceptions of their own academic achievements by age six in same-aged classrooms.

In the same vein, it was found that both first and second graders in same-aged classrooms who saw their own ability as highly related to their successes and failures had lower achievement scores on all dimensions. Again, this may be related to the fact that differences from the norm are more obvious in same-age classrooms. It was also found that reading and spelling achievement scores for same-aged first and second graders were positively related to their reading self-concept. As hypothesized, this demonstrates that 6- or 7-year olds show a realistic self-concept that is directly tied to their actual achievement. This was not found to be true for same-aged kindergarteners. For mixed-aged classrooms, no significant relationship was obtained between actual achievement and self-concept as hypothesized, representing an ego-protective function of the setting.

Limitations of the Present Study

A broader effect for classtype might have been found if the two classroom types that we sampled had differed to a greater extent. The same-age classrooms in our study integrated many of the same interactive characteristics that the mixed-age format champions. Because this study was part of a larger project, data on teacher report of classroom characteristics is currently being collected. Preliminary inspections of this data suggests that the same-age classroom teachers reported employing peer-assisted learning frequently. They also employed the frequent use of manipulatives, group discussion, student-selected learning

centers, relatively free movement about the classroom, groupings of students by varying abilities and by relative ages. All of these characteristics were also rated as practices the teachers in the mixed-age classrooms "always" emphasized. These similarities represent the extent to which these primary classrooms recognize the salience of developmentally appropriate practices and cooperative learning in the primary years regardless of age ranges of children.

Although the PLC program at Oak Forest has been in place for five years, it is important to take into account that at Garden Oaks the mixed-age Montessori program, whose students compose a little less than half of the mixed-age subjects, was only begun this year. The students had minimal exposure to their particular educational environment at the time of testing. It is possible that the students had not had enough exposure to their classroom environment at the time of testing to reflect an effect.

Another limitation to this study relates to the format and length of the attributional style measure. A lack of research in attributional style for children in kindergarten through second grade prompted the adaptation of the MIARQ, which was designed for a different population, mentally retarded children. The scale was also shortened to fit the time constraints of the data collection period. The abbreviation of the scale placed substantial limitations on the subscales of the MIARQ-R. A revised and lengthened scales, which would duplicate content

areas within the subscales, would most likely provide an improvement in internal reliability. In hindsight, a format that is less hypothetical and provides subjects with either the opportunity for open-ended responses or at the very least, additional alternative responses would be preferable to the forced-choice format that was employed.

Recommendations for Future Research

Because few precedents were found in attributional research that addressed children as young as five, future research into the area of the development of attributional style, self-concept and other achievement related constructs, should target this age group. A concerted effort needs to be made in the area of reliable, age-appropriate scale construction for children ages 5-10 years. With this in mind, developmental studies are needed that focus on the ages 5 to 10 years, grades kindergarten through four, with special attention to second grade and the eighth year.

If additional research into the impact of the educational environment and instructional style is undertaken, care should be taken to fully understand the actual classroom dynamics and teaching style in the particular classrooms sampled. Longitudinal studies are also needed to assess long-term effects on achievement, attributional style and self-concept.

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Table 1

Demographic Characteristics of the Sample

	Mixed-Age Classrooms n=72	Same-Age Classrooms n=97	TOTAL n=169
<u>GRADE</u>			
Kindergarten	18 (25%)	26 (27%)	44 (26%)
First Grade	30 (42%)	33 (34%)	63 (37%)
Second Grade	24 (33%)	38 (39%)	62 (37%)
<u>GENDER</u>			
Girls	34 (47%)	47 (48%)	81 (48%)
Boys	38 (53%)	50 (52%)	88 (52%)
<u>ETHNICITY</u>			
European American	29 (42%)	51 (53%)	81 (48%)
Hispanic American	21 (30%)	26 (27%)	49 (29%)
African American	18 (26%)	17 (18%)	36 (21%)
Asian American	1 (2%)	2 (2%)	3 (2%)
<u>SOCIOECONOMIC STATUS</u>			
Free/Reduced Lunch	26 (38%)	25 (26%)	54 (32%)
Full Pay Lunch	43 (62%)	71 (74%)	115 (68%)

Note. As anticipated, X^2 analyses failed to reveal significant differences between groups on the demographic variables.

Table 2

Achievement Scores: Means and Standard Deviations for Mixed-Age and Same-Age Groups

	Mixed-Age Classrooms (n=72)			Same-Age Classrooms (n=97)		
	K (n=18)	1st (n=30)	2nd (n=24)	K (n=18)	1st (n=30)	2nd (n=24)
Reading						
M	100.89	100.53	94.13	101.35	95.87	99.12
(SD)	6.97	18.17	13.87	13.22	9.79	16.30
Mathematics						
M	97.77	99.15	93.67	101.19	95.64	99.86
(SD)	9.66	17.93	12.16	11.87	10.64	14.86
Spelling						
M	96.99	98.83	89.89	97.42	96.50	99.76
(SD)	10.65	14.11	13.41	14.40	11.04	17.93
Comprehensive						
M	99.44	100.39	91.43	101.74	95.23	99.86
(SD)	12.77	16.01	14.04	18.32	11.28	18.34

Note. Weschler Individualized Achievement Test-Screener (WIAT):
M=100, SD=15

Table 3

Self-Concept Scores: Means and Standard Deviations for Mixed-Age and Same-Age Groups

		Mixed-Age Classrooms (<u>n</u> =72)			Same-Age Classrooms (<u>n</u> =97)		
		K (<u>n</u> =18)	1st (<u>n</u> =30)	2nd (<u>n</u> =24)	K (<u>n</u> =18)	1st (<u>n</u> =30)	2nd (<u>n</u> =24)
Reading							
	<u>M</u>	48.44	49.68	48.51	51.15	50.36	51.32
	(<u>SD</u>)	13.26	11.02	10.11	7.22	8.60	9.02
Mathematics							
	<u>M</u>	47.58	48.89	50.83	51.85	51.03	49.59
	(<u>SD</u>)	11.86	10.84	9.25	7.82	8.39	10.65
General School							
	<u>M</u>	47.11	48.26	52.71	52.14	51.49	48.76
	(<u>SD</u>)	12.48	11.44	8.39	7.29	7.68	10.82
Peer Relationships							
	<u>M</u>	48.43	49.34	54.15	51.09	50.60	47.96
	(<u>SD</u>)	11.91	10.79	7.88	8.37	16.12	10.32
General Self							
	<u>M</u>	47.69	49.42	50.77	51.59	50.59	50.08
	(<u>SD</u>)	11.98	10.18	9.68	7.87	8.82	9.19

Note. Self-Description Questionnaire (SDQ): M=50, SD=10

Table 4

**Attributional Style Scores: Means and Standard Deviations for
Mixed-Age and Same-Age Groups**

	Mixed-Age Classrooms (n=72)			Same-Age Classrooms (n=97)		
	K (n=18)	1st (n=30)	2nd (n=24)	K (n=18)	1st (n=30)	2nd (n=24)
Internal						
<u>M</u>	43.06	35.83	24.04	37.94	37.95	28.43
<u>(SD)</u>	26.75	17.01	19.57	19.30	20.28	19.78
Internal- Effort						
<u>M</u>	39.69	39.05	45.05	39.79	44.92	45.99
<u>(SD)</u>	22.78	19.97	21.53	22.27	23.04	20.29
Internal- Ability						
<u>M</u>	58.89	53.99	36.16	54.64	46.84	38.36
<u>(SD)</u>	26.29	23.62	26.97	30.92	27.99	26.58

Note. Modified Individual Achievement Responsibility
Questionnaire-Revised (MIARQ-R): nonstandardized, raw scores

Table 5

**Comprehensive Achievement Scores: Means and Standard Deviations
for Ego-Protective and Helpless Attributional Styles by Grade**

		Ego-Protective Attribution (<u>n</u>=43)	Helpless Attribution (<u>n</u>=57)
Kindergarten	<u>M</u> (<u>SD</u>) <u>n</u>	102.33 (23.51) 12	96.63 (11.52) 16
First Grade	<u>M</u> (<u>SD</u>) <u>n</u>	100.95 (15.53) 19	96.87 (16.18) 23
Second Grade	<u>M</u> (<u>SD</u>) <u>n</u>	106.00 (17.60) 12	88.00 (13.35) 18

TOTAL ^a	<u>M</u> (<u>SD</u>)	102.7 (18.9)	94.0 (13.7)

Note. WIAT Comprehensive standard scores have a mean of 100 and a standard deviation of 15.

^a WIAT Comprehensive score means for positive versus negative attributional style groups differ significantly ($p < .05$), based on Bonferoni (Dunn) t-tests.

Figure Caption

Figure 1. The Modified Individual Achievement Responsibility Questionnaire-Revised (MIARQ-R) an 8-item forced-choice format questionnaire, adapted for this study from the Modified Individual Achievement Responsibility Questionnaire (MIARQ; Ringelheim, Bialer, & Morissey, 1970). Items 3, 4, 7, and 8 provide internal versus external choices and items 1, 2, 5, and 6, offer internal ability versus internal effort options. The MIARQ-R provides scores, developed using a conditional probability approach, for three scales: (a) internal attributional style (vs. external, such as powerful others), based on four items, (b) internal, stable attributional style (i.e., individual ability), based on five items, and (c) internal, unstable attributional style (i.e., individual effort), based on seven items.

Attributional Scale

Subject _____

Tester _____

Teacher _____

Date of Testing _____

This is not a test. I am trying to find out how kids your age think about certain things. I am going to ask you some questions and you pick the answer that best describes what happens to you or how you feel. If you want me to repeat a question, ask me. Do you understand? All right, listen carefully and answer.

Examples

1. Which do you like best

- A) apples
or B) oranges?

2. If you had 50 cents what would you buy?

- A) a chocolate bar
or B) a lollipop?

1. When you don't do good in reading, is it

- (2) A) Because you did not try hard enough
(1) B) Because Reading is too hard for you?

8. When you can't remember a story is it

- (2) A) Because you didn't listen
(4) B) Because the story was too long?

2. When you do good in all your school subjects is it

- (2) A) Because you tried really hard
or (1) B) Because school work is easy for you?

3. When you lose a game to another kid is it

- (4) A) Because He/She is very good at the game
or (1) B) Because you're not good at games?

4. When you finish a puzzle quickly is it

- (4) A) Because the puzzle was easy
or (2) B) Because you worked hard on it?

5. When you do bad in Math is it

- (2) A) Because you didn't try hard enough
or (1) B) Because Math is too hard for you?

6. When you don't understand your school work is it

- (1) A) Because school is always hard for you
or (2) B) Because you didn't listen carefully?

7. When you learn something fast is it

- (2) A) Because you listened carefully
or (4) B) Because the teacher explained it well?