Inviting Self-Efficacy in Children: Taking Competition Out of the Game

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The predictive power of self-efficacy beliefs of children aged 4 to 10 was investigated using common schoolyard activities. Participants were 24 elementary school-aged children and 4 pre-kindergarten-aged children. Age-appropriate tasks included the standing broad jump for both groups, a targeted ball kick for the older group and basketball dribbling for the younger group. Results indicated that until around the fifth birthday, the age at which most children begin formal education, the ability to predict performance was not reliable. The school-aged children were more accurate in their predictions and, as a group, illustrated the role of peer support and self-confidence in developing self-efficacy.

Self-efficacy has been defined as the beliefs we hold about our ability to produce designated levels of performance (Bandura, 1994). By believing in ourselves, we can often achieve higher levels of accomplishment than our past performance might predict. Because what we believe about ourselves in one facet of our lives often carries over to self-attitudes in other areas, it is important that we find schools, work settings, circles of friends, and activities that foster a strong sense of self-confidence, self-assurance and self-respect.

Purpose

The purpose of this research study was to determine how strongly self-efficacy predicted children's achievement on particular athletic skills tasks. I also wanted to determine if there were any significant differences between the sexes in self-efficacy predictive reliability, and if there were any differences between two discrete-age groups (pre-kindergarten and

elementary school-aged children) in self-efficacy predictive power. The participants in this study were all younger than eleven years of age.

By choosing athletic tasks, in which virtually all children have situational experience, there is a lack of trepidation about the requirements by the participants. In addition, by choosing skills practiced during recess and other contexts such as kickball, hopscotch, etc., the participants have a particular level of competency that could be measured in the first trial.

Background

Children's academic performance has been the subject of several investigations of self-efficacy research (Pajares, 1996; Zimmerman, Bandura, & Martinez-Pons, 1992). Pajares (1996) determined that measures of self-efficacy are a reliable predictor of the outcomes of particular tasks. Zimmerman et al. (1992) found that students' perceived efficacy to achieve, combined with personal goal setting, influenced academic achievement. Few studies, however, have investigated whether similar results would be found in another important realm for children, the playground. Competition for grades, structured after-school classes, and recreational league coaches who push winning, all place children into "me-against-thee" situations. Adults measure children against older siblings, the kid next door, and the teacher's pet. Being judged by teachers, coaches and parents may not make a child's world an inviting place. This study looked at a sample of school children and placed them in "win-win" situations. The only measurements made known to each child were those of his/her own performance. Participants asked questions regarding how the winner would be chosen and wanted to know if there would be prizes. I informed the group that I would only be looking at each child's performance measures in relation to their future scores and that I would not rate any child's performance against another's. I also affirmed that they were all winners.

What I quickly discovered while conducting the research was that in a non-competitive, non-pressured environment, children would naturally support each other in their endeavors. The participants behaved as if they felt special and honored to be chosen to be part of this study. This was

reflected in their eagerness to participate at each session and their vocal expressions of thanks to the program director for choosing them for the experiment. They were excited to get out of the school cafetorium and into the bright sunlight. They were willing to give encouragement to each other as each child took her/his turn at each event. Children did not verbally express any "better than me" frustrations or any "better-than-you" gloating. As each child was moving into a new activity, the other participants would offer encouragement and attention to his/her performance.

This study replicated the design of earlier studies done with children in an athletic/physical skill environment, including Watkins, Garcia, and Turek (1994) and Miller (1993), but involved a different participant group than other studies. One earlier study investigated the self-efficacy of young, male baseball players, between the ages of 9 and 17 (Watkins et al., 1994). The participants in this study were avid baseball players enrolled at a baseball camp. The researchers were testing the boys as they practiced at the batting cage station of the camp facilities. The results of this study indicated that self-efficacy only modestly related to the second trial of each of two sets of hitting. They also found that previous performance modestly predicted subsequent hitting performance. Hitting performance, however, significantly predicted self-efficacy measures.

Major differences in the design of the Watkins et al. study and the current study were the tasks involved, age of the participants, and the setting. The elementary school children participated in this study on their school playground and performed tasks that they typically would not practice repetitively in and of themselves. There was no sense of outright competition, as would be found in a sports camp, and the locale was familiar, thus possibly decreasing anxiety levels regarding performance.

Another earlier study used participants who were competitive swimmers (Miller, 1993). Miller tested the participants on skills to which they devoted many hours of intensive practice. Miller divided the swimmers into skill-level groupings to determine if ability worked with self-efficacy to predict outcome. Miller determined that self-efficacy did indeed relate to swimming speed for all subjects regardless of ability. His results support claims that the higher self-efficacy, the better the performance, and

reciprocally, the lower the self-efficacy, the poorer the performance. Miller's results challenge Bandura's belief (Bandura, 1982) that only high skill participants show efficacy determinant functions.

Method

Participants

Of a participant pool of 32 children, 28 completed the study. The 4 children not completing this study were not present during the second week of testing. One group was composed of 24 elementary school-aged children. This group consisted of 12 boys and 12 girls. Their ages ranged from 5 years 1 month through 10 years 7 months. A second group was composed of four boys who were between 4 years 2 months and 4 years 7 months.

Apparatus

For the standing broad jump event, I placed a cushioned mat on the ground of the school or park playground. A cardboard pole was marked at 6-inch intervals and numbered from 1 to 19. As the children jumped beside the measurement device, their score was equal to the interval number in which their heels landed. I chose an absolute scale of measurement to make it easier for children to judge their abilities and to get the focus on personal achievement, not real-world competition. Without focusing on feet, inches or centimeters, children could easily judge where each distance demarcation was located on the cardboard tube. This simple scale made it easier for children during the self-prediction phase of the study as they could see clearly the zone into which they had jumped the week before by allowing them to make a prediction using whole numbers.

For the ball kick event, I used three basic playground-type balls (e.g., Four Square balls). For the target zone, I placed two orange sports cones 114 centimeters apart. The children stood 4.5 meters from the cones as they kicked the balls toward the target area.

For the basketball-dribbling event, the children used a regulation size basketball.

Procedure

The children in this study participated in two separate athletic tasks that were determined by their age. All children performed the standing broad jump. The children stood with their heels at the end of a mat and then were asked to jump as far as they could. Each child made a practice jump before completing the measured trial. Their score was based on where their heels landed as they ended their jump.

The second athletic task for the older group of children (n=24) was to kick a ball towards a target zone. The children stood 15 feet from the target zone as they kicked the ball. Each child briefly practiced kicking in an unstructured format before scoring began. The measurement of ability was the number of times that the child was able to kick the ball through the cones out of three attempts.

For the four youngest children, the task was to dribble a basketball as many times as possible without losing control of it or taking a step.

The procedure consisted of three steps: (a) initial baseline measurements of performance, (b) self-prediction of next performance, and (c) measurement of their second skill's tests.

The older children's baseline skill's performance abilities were measured on an afternoon after school. One week later they gathered together again and each child was individually shown his/her performance scores from the previous week and then asked to make a prediction of how they would perform that afternoon. They chose their response from three choices: (a) less well, (b) same or (c) better. They then performed the same tasks as they had the previous week and their new scores were recorded.

The younger group of children completed all phases of the study in one afternoon, but the procedures followed the same order. Because

young children generally have a shorter attention span and less reliable memory for brief, unremarkable events, I judged that more reliable results could be received by completing the study on a single afternoon rather than carrying it out over a week.

Results

Results from the current study show that ability to predict performance appears to increase with age. For the school-aged children, there was little difference in self-prediction reliability between the sample of boys and of girls used in this study.

School-aged participants

Analysis of the results, see Table 1, shows that the majority of school-aged participants were able to predict future performance. Seventy-five percent of the school-aged females were able to predict their performance on the ball kick test as well as two-thirds of the males being able to predict their performance in the ball kick activity. Two-thirds of both the females and the males were able to predict their performance on the broad jump activity. For the standing broad jump task, the chi-square results were not statistically significant ($1, \underline{N} = 24) = 1.0$, $p = .32$. For the ball kick task, the chi-square results were similar, ($1, \underline{N} = 24) = 0.65$, $p = .42$, with no statistical significance. With consideration given to the small sample size, it is important to note that the chi-square results did indicate that self-prediction of performance occurred somewhat more frequently than would be expected if left simply to chance. Implications for additional research exist and will be discussed in another section of this paper.

Pre-kindergarten participants

This group showed considerably less ability to predict performance accurately, although the participants had just completed their initial skills assessment. For the younger group of four, only a single participant could accurately call on self-efficacy to predict his performance, as evidenced in Table 2. Not surprisingly, this subject was the oldest of his group and

he even succeeded in predicting performance in both categories, jumping and basketball dribbling.

Table 1

Predictive power of self-efficacy for performance of school-aged participants

Raw scores

	Standing broad jump			Ball kick	
	Total	Predicted 2nd outcome	Did not predict 2nd outcome	Predicted 2nd outcome	Did not predict 2nd outcome
All	24	16	8	17	7
Girls	12	8	4	9	3
Boys	12	8	4	8	4

Percentages

	Standing broad jump		Ball kick	
	Predicted 2nd outcome	Did not predict 2nd outcome	Predicted 2nd outcome	Did not predict 2nd outcome
All	67%	33%	71%	29%
Girls	67%	33%	75%	25%
Boys	67%	33%	67%	33%

Table 2

Predictive power of self-efficacy for performance of pre-kindergarten participants

Raw scores

		Standing broad jump		Ball kick	
	Total	Predicted 2nd outcome	Did not predict 2nd outcome	Predicted 2nd outcome	Did not predict 2nd outcome
All	4	1	3	1	3

Percentages

	Standing broad jump		Ball kick	
	Predicted 2nd outcome	Did not predict 2nd outcome	Predicted 2nd outcome	Did not predict 2nd outcome
All	25%	75%	25%	75%

Discussion

The most interesting and encouraging phenomena witnessed during the sessions with the older children were their willingness to follow rules and the perceptible development of pride in themselves. As I took the children outside onto the playground from their school, they expressed their excitement and interest in the experiment. They exhibited a supportive attitude towards each other and towards completion of the tasks. They offered to help in any way they could, including retrieving balls kicked outside the immediate kicking zone and resetting the broad jump measuring device if it had been knocked out of line. They encouraged the other children in their performance and showed respect as the children prepared to jump or line up a kick.

The younger children were more distracted and less involved in the procedure. The single child, who showed acumen in self-prediction, also exhibited a high measure of self-confidence and self-efficacy in other athletic and interpersonal activities. Observation of his interactions with both adults and the younger children indicates a greater level of maturity and cognitive development as compared to the other children in his age group.

Comparing the results of the two groups of children indicates that self-prediction of performance is a cognitive process that develops as children mature. The older children in the sample expressed a strong interest in their performance and indicated that they wanted to do well. Only two incidences were reported in which a child in this group predicted that they would do less well than their original baseline measure, and only one of these children was accurate in this prediction. At the second meeting when they viewed their previous week's scores and were asked individually to predict their performance on the second trial, they all responded in a similar pattern. They would check their baseline score, look thoughtfully at the skill station, glance back at their previous score and then give an estimate of future performance. They were obviously considering carefully what they felt capable of achieving. The younger children, all boys, showed a sharp contrast in their behavior.

These pre-kindergarten children were informed of their previous score and then without hesitation would give a quick one-word response ("less," "more," or "same") and immediately begin their next task.

Future studies, done with a larger sample of children using a similar age range and an equal number of boys and girls in each age group, could investigate further whether gender, cognitive developmental level, or age is responsible for the differences in self-prediction. The older children's success in self-prediction contrasts markedly with the inability of the younger group to predict performance. These results indicate that further research should be done to determine how self-efficacy develops as a child matures.

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