Project Goals and Findings
Fall 2006

Over the past 18 months we have been studying the academic motivation of a large group of third- through eighth-grade students in the Portland area. In particular, we are interested in the intrinsic and extrinsic reasons underlying their academic behaviors. When students are intrinsically motivated, they see learning as an end in itself; they tend to be interested in what they are doing and take on personally challenging material. When students are extrinsically motivated, they see schoolwork as a means to an end; they tend to be concerned with satisfying their teachers or parents and often prefer easy work that can be accomplished quickly. We focused our research on how students’ levels of intrinsic and extrinsic motivations change as they progress through the elementary and middle school years. Because many students do their schoolwork for both intrinsic and extrinsic reasons, we examined shifts in students’ reports of both types of motivation over the course of one year. We also tested how motivational shifts were associated with other factors, such as the age of the students, their sense of the school culture, their peer relationships, and their levels of academic achievement.

Why is studying these types of motivation important? Research shows that there are many benefits of intrinsic motivation: persistence in the face of setbacks, deep conceptual understanding, a tendency to continue learning outside of school, and enjoyment of the learning process. Simply put, students who are intrinsically motivated have the tools to become life-long learners. In order to promote intrinsic motivation, it is important to understand how it tends to change with development and what factors might underlie these changes. Extrinsic motivation is also useful (e.g., it has been shown to prevent dropping out among high-school students), although research suggests that it may not have the same sustaining power as intrinsic motivation. Because both types of motivation play a role in keeping students engaged in the learning process, it is important to understand the precise role each plays. For example, are they associated differently with important outcomes and do they have distinct underlying causes?

Overview of Procedure

The findings reported below are based on 1051 third- through eighth-grade students. (See Table 1 for the number of students by grade level and gender.) Students came from eight different schools: four K-8 schools, three elementary schools (K-5), and one middle school (6-8). Five of these schools were public and three were Catholic. At each school, we administered surveys to participating students once in the fall and once in the spring. The surveys measured students’
intrinsic and extrinsic motivations as well as a number of other factors we expected to be associated with motivation, as described below.

Table 1: Number of Participating Students by Grade Level and Gender

<table>
<thead>
<tr>
<th>Grade Level</th>
<th>Girls</th>
<th>Boys</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>83</td>
<td>68</td>
<td>151</td>
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<tr>
<td>4</td>
<td>86</td>
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<td>6</td>
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<td>140</td>
</tr>
<tr>
<td>8</td>
<td>107</td>
<td>73</td>
<td>180</td>
</tr>
<tr>
<td>Total</td>
<td>583</td>
<td>468</td>
<td>1051</td>
</tr>
</tbody>
</table>

Developmental Changes in Intrinsic and Extrinsic Motivations

We first used students’ surveys from the fall to look for age differences in intrinsic and extrinsic motivations. Conventional wisdom suggests that younger students are more excited about learning than are older students and that is precisely what we found. Figure 1 shows that older students report less intrinsic motivation than younger students. This is a troubling trend because of all the benefits of intrinsic motivation listed above. The findings for extrinsic motivation, on the other hand, did not reveal a straightforward pattern of age differences. Figure 1 shows that extrinsic motivation was generally highest among the youngest students, but it popped up again among the sixth and eighth graders surveyed.

![Figure 1: Differences in Motivation by Grade Level](image)

Intrinsic Motivation
Omnibus ANOVA: $F(5, 1045) = 13.74, p < .001, \eta^2_p = .06$

Extrinsic Motivation
Omnibus ANOVA: $F(5, 1045) = 5.85, p < .001, \eta^2_p = .03$

We can’t be certain of how to interpret these patterns, however, because they are based on comparisons of different groups of students at each grade level. For example, does extrinsic motivation *generally* increase at sixth grade, or are the *particular* sixth graders that we surveyed especially high in extrinsic motivation? This is an important distinction because it bears on whether or not we would expect the current fifth graders to experience a surge in extrinsic motivation next year. To really understand how motivation changes with development, we need to look at the *same* individuals over time. This is why we asked students to complete our survey twice. By comparing students’ responses in the fall to their responses in the spring, we can see if they became more or less motivated over time. In addition, by making these comparisons
separately for the elementary (Grades 3-5) and adolescent (Grades 6-8) students, we can see if motivation changed in different ways for younger versus older students.

As shown in Figure 2, levels of intrinsic motivation decreased from fall to spring, and this decline was especially pronounced for the adolescent as compared to the elementary students. This supports the grade level comparisons reported above: children appear to lose intrinsic motivation as they progress through school and this loss is especially steep for middle school students. Figure 2 shows that levels of extrinsic motivation also decreased from fall to spring, especially among the elementary students. There were no differences between boys and girls in their levels of intrinsic and extrinsic motivations or in the degree to which these motivations changed over the school year.

Perceptions of the School Environment

What might account for these downward shifts in motivation? We speculated that students’ perceptions of the school environment might play a role. Do students see their schools as focused primarily on learning, such that mistakes are an accepted part of the learning process, effort is rewarded, and conceptual understanding is the main goal? Or, do they see their schools as focused primarily on evaluation, such that mistakes are to be avoided, special privileges are reserved for only the highest-achieving students, and doing better than others is the main goal? We asked both students and teachers at each of the schools to complete surveys about their perceptions of the school environment as learning-focused and as evaluation-focused to test a few ideas.

Because elementary school classrooms tend to be structured differently than middle school classrooms, we first wanted to see if there would be age differences in students’ perceptions of the school environment. As shown in Figure 3, elementary students perceived their schools as more learning-focused and less evaluation-focused than did adolescent students. Surveys from the teachers showed a similar pattern of age differences: The 27 teachers of elementary students reported their schools as more learning-focused and less evaluation focused than did the 24 teachers of adolescent students. Interestingly, there were also unexpected differences between boys (who perceived their schools as more evaluation-focused) and girls (who perceived their schools as more learning-focused).
In addition to examining age differences, we wanted to see how students’ perceptions of the school environment would change over the course of the year. While perceptions of the school as learning-focused did not change very much, we saw a significant increase from fall to spring in adolescent students’ perceptions of their schools as evaluation-focused (Figure 3).

Could these changes be related to the changes in motivation we discussed above? Our data suggest that they were. The more students felt the learning focus increased over the school year, the more they held steady or even increased in intrinsic motivation (Figure 4). The more students felt the evaluation focus increased over the school year, the more they decreased in intrinsic motivation and the more they held steady or even increased in extrinsic motivation (Figure 5).

These findings suggest that the decline in intrinsic motivation may be due, in part, to students seeing their school environments as increasingly evaluation-focused and decreasingly learning-focused. This is only one piece of the puzzle, however. On a statistical level, students’ perceptions of the school environment helped explain roughly 7% of the differences in their intrinsic motivation. While this may seem small, it is actually quite significant for something as complex as motivation, which is influenced by so many other factors, including genes, learning.
histories, family support, and self-confidence. Still, to gain a more complete picture of changes in motivation, we turn to another important influence in students’ lives: peers.

The Role of Peers

We wondered if students’ social networks might also influence their motivation. We asked students about two specific dimensions of their relationships with peers: (1) the desire to be similar to peers in terms of effort and school achievement and (2) the extent to which they prioritized their peers over their academic work.

Before considering how these dimensions might be related to motivation, we first looked to see if they might differ for elementary and adolescent students. As shown in Figure 6, peer similarity was more important to adolescent students than to elementary students, but there were no meaningful age differences for prioritizing peers over academic work. Moreover, the desire to perform similarly to peers decreased from fall to spring, with a larger decline for elementary than for adolescent students. In contrast, the tendency to prioritize peers over academic work increased from fall to spring for both age groups. There were also some interesting gender differences. Peer similarity was more important to boys than to girls, but there was a more complicated pattern for the peer priority variable: in elementary school, boys prioritized their friends more than girls did, but adolescent boys and girls tended to prioritize their peers over their academic work equally.

Might these changes in the peer variables relate to the changes in motivation we discussed above? One might imagine that wanting to be similar to peers could have either positive or negative effects on motivation, depending on the values of the peer group. In fact, we found that the desire for similarity was related to extrinsic motivation but not intrinsic motivation: the more students increased in their desire to be similar to peers over the year, the more they increased in extrinsic motivation (Figure 7). Regarding the peer priority variable, we expected that prioritizing peers over academic work would be harmful to students’ intrinsic motivation. This is exactly what we found: the more students increased in their tendency to prioritize peers over their academic work, the more they decreased in intrinsic motivation over the year (Figure 7).
These findings suggest that the decline in intrinsic motivation with age may be due not only to changes in the school context, but also to changes in the relative importance of peers versus academics. Statistically speaking, the peer variables helped to explain another 6% of the differences in students’ intrinsic motivation. This is another small piece of the puzzle but, again, a piece that is quite significant given the complexity of motivation.

**Links to Achievement**

Conventional wisdom suggests that when students are motivated, they are successful in school. Our work, however, shows that the type of motivation is critical. We found that students high in intrinsic motivation performed well in school and on standardized tests, but students high in extrinsic motivation actually received lower grades in their classes and performed worse on standardized tests.

Now, we know there is a link between motivation and achievement, but we’re left with a chicken-and-egg question: Which comes first? It seems intuitive to think that motivation leads to achievement, but achievement might also affect motivation because of the feedback students receive about their performance. Indeed, we found that intrinsic motivation and GPA were equally predictive of one another. That is, students with high intrinsic motivation in the fall had higher grades in the spring than we’d expect based on their past performance, and students with high GPAs in the fall had higher intrinsic motivation in the spring than we’d expect based on their past intrinsic motivation (Figure 8). The inverse relationship between GPA and extrinsic motivation only went in one direction, however; students with lower GPAs in the fall tended to have higher extrinsic motivation in the spring than we’d expect based on their past extrinsic motivation (Figure 8).

So, doing poorly appears to put students in an extrinsic mindset, perhaps because of increased pressure from parents and teachers to shape up or suffer the consequences. Doing well, on the other hand, enhances intrinsic motivation, perhaps due to the personal satisfaction and increased self-confidence students feel as a result of their success. This creates a positive cycle because gains in intrinsic motivation then lead to greater academic success, and so on. Of course, statistics can only tell us so much about the direction of these relationships. In order to be certain about causality, we would need to conduct an experiment in which children were
randomly assigned to different conditions and their levels of motivation and/or achievement were manipulated. Often research like this can be done in a laboratory, but classroom research like ours is necessary for understanding the motivation of real students in meaningful contexts.

**Figure 8: The Relationships Between Motivation and Achievement**

![Diagram](image)

**Conclusions**

So, what have we learned from this project? For us, the most important findings relate to the developmental changes that occurred in intrinsic motivation. We found that younger students were more intrinsically motivated than older students, and that students at all grade levels experienced declines in intrinsic motivation *over the course of a single year*. These declines were explained, in part, by students’ experiencing their school environments as decreasingly learning-focused and increasingly evaluation-focused, and by their increasing tendency to prioritize peers over schoolwork. The loss of intrinsic motivation is especially troubling given the positive relationship we found between intrinsic motivation and success in school. Our findings suggest that efforts to encourage risk-taking and persistence, emphasize the importance of conceptual understanding, and foster an acceptance of mistakes as a necessary part of learning could help attenuate declines and assist students in becoming motivated, life-long learners.