PREDICTING STUDENT ENGAGEMENT WITH PEER ACADEMIC AND SOCIAL REPUTATIONS: ASSESSING WITHIN-YEAR CHANGE

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by

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ABSTRACT

Student engagement in school is related to higher achievement and better behavioral outcomes. Peer status may be one way in which students gain an understanding of their own abilities. Peer academic reputation has previously been shown to influence student's interest in school, effort, and GPA. The present study explores the role that peer academic reputation (PAR) and peer social preference (PSP) play in within-year changes in three measures of student engagement. The study also examines whether these relationships are mediated by changes in student's academic and social self-concept. A sample of 1523 students was collected from 96 first, third and fifth grade classrooms in Pennsylvania and Illinois. OLS regression models tested the individual and joint contribution of PAR and PSP on fall-to-spring changes in teacher-rated effort and two student-report measures of school engagement, Striving and Affect. PAR in the fall predicted changes in effort above and beyond stability and controls, while PSP predicted changes in Striving and Affect. Relationships are partially mediated by their association with changes in student's academic and social self-concepts. Grade-level comparisons suggest that students in first grade have higher mean levels of self-reported Striving and Affect, and that PAR has a stronger influence on changes in teacher-rated effort for younger children. Results are considered in the context of prior research and methods for changing teaching practices.
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Introduction

Student engagement in school has become a focus of education research. Engagement in school has been linked to better academic performance and adjustment in the classroom (Skinner et al., 2008). Students who become disengaged from school are more likely to be absent from the classroom, struggle academically, and are at a greater eventual risk for dropping out of school (Finn & Rock, 1997). Children who experience early academic struggles and who come from low-SES families are at a high risk of disengaging from academics by middle school (Balfanz, et al., 2007).

Engagement behavior develops from a complex set of internal motivational processes. As children learn from their experiences in school they develop self-conceptions about their own academic and social abilities. Higher self-conceptions of ability may lead to greater classroom engagement. Students who suffer from poor academic and social self-concept are at the greatest risk from decreased engagement and potential behavior problems (Fredricks, Blumenfeld & Paris, 2004; Buhs, 2005; Marsh & Yeung, 1997). The long-term risks suggest that many children in elementary and middle school need support from the classroom social context in order to promote connection and engagement with school.

The classroom social environment represents a diverse and complex context in which children develop their understanding and approach to academic and social tasks. As children move through school, interaction with the social context of the classroom shapes the emotions, cognitions and behavior in school. Peers and peer groups become a major influence during the late elementary and middle school years, and thus become an important source of information for children about their own abilities (Ryan, 2000, 2001).
Peers may directly and indirectly influence engagement in the classroom through the feedback they provide about academic and social abilities. The reputation that students have with their peers for academic success may influence the type of feedback they receive from peers. Peer social preference (how well liked vs. disliked a child is by their peers), also may predict changes in student's enjoyment and affect toward their school. These peer processes likely reflect differences in the feedback that students receive about their own social and academic abilities. Changes to self-conceptions may, in turn, predict further changes to student engagement and enjoyment in the classroom. Understanding more about the influence of peers and peer reputation on engagement might be useful for informing and changing teaching practice. For instance, by providing children with peer academic or social reputation with opportunities for success, teachers may be able to improve the engagement of some students.

The present study aims to address the role that peer reputations play in the development of student engagement and self-conceptions during the school year. Our study explores the joint contributions of peer academic reputation and peer social preference in determining changes to measures of school engagement. We also explore the possibility that these relationships are mediated by changes in student's own self-conceptions of academic and social ability. Finally, we consider possible and expected developmental differences between children in early, middle and late elementary school in these processes.
**Literature Review**

Engagement is separated into emotional, behavioral and cognitive dimensions, but often all three are combined into a multi-component construct in school research (Fredricks, Blumenfeld & Paris, 2004). Students who are engaged exhibit behaviors that are conducive to learning and cooperation; positive affective reactions to school environment and school work; and higher levels of intrinsic value and cognitive investment in school tasks. Engagement is closely linked to student's self-efficacy, goal orientations and the approach to learning (Caraway et.al, 2003), as well as to task values for achievement (Fredricks, Blumenfeld & Paris, 2004).

The goal of many engagement researchers has been to identify aspects of the social context that contribute to change in engagement behaviors. Peer academic and social statuses represent potential mechanisms for influencing longitudinal change in self-concept and engagement. The goals of this paper are to address the contribution of peer academic and social reputation to changing engagement and self-concept. The following sections address the roots of engagement, the contribution of peers to changes in student engagement, and the goals of the present study in further explaining these relationships.

**Roots of Engagement: Competence, Control and Relatedness**

Social, developmental and educational psychology have, for years, sought to explain why some children are consistently engaged and high-performing while others seem to flounder and struggle to enjoy school. Understanding the development and reasons for school engagement requires an understanding of the nature of motivation and perceptions of competence, control and relatedness in the classroom. This section presents theories and supporting evidence suggesting that engagement is driven by a complex mix of emotion, perception and interactive personal
experiences; these inform self-conceptions of ability and skills that encourage or discourage engaged behavior.

Skinner and colleagues (2008) proposed that student engagement is actually part of a larger internal motivational dynamic. Their model suggests that engagement vs. disaffection is a complex and reciprocal process of emotions and behaviors within the individual that are partly determined by children’s belief about their own competence and their sense of relatedness to others in the environment. The study examined the development of these internal dynamics and their relationship to levels of engagement across late elementary school. Level of classroom engagement, in turn, predicted children’s learning and achievement outcomes. Overall levels of emotional and behavioral engagement decreased while disaffection increased between fifth and seventh grades. Finally, Skinner's model suggests that supportive social dynamics within the classroom are likely to influence children’s levels of engagement (Skinner et.al. 2008) including, potentially, peer influences (Fredricks, Blumenfeld & Paris, 2003). Thus the social context of the classroom and the opinions of peers may hold sway over student self-evaluations and engagement with school.

At the foundation of motivated and engaged behavior is an inherent desire to exhibit mastery over the environment and develop competence. Robert White (1959) first used the term "competence motivation" to explain a drive for developing sustained efficacy and competence in physical and mental tasks. White described the behavior of infants and young children not as merely random and repeated, but as intentional and directed efforts to explore, understand and master environment. A sense of efficacy emerges from successfully building competence, and motivates the individual to persist and continue exploration and mastery (White, 1959). Thus
children who feel competent and able to academically and socially are more likely to be actively engaged in the school environment.

Harter (1978; 1992) proposed a model of competence that is particularly relevant to academic domains and to the development of motivation in children. In Harter's model the experience of success or failure combined with the perception of control and feedback from others combine produce a series of emotions and perceptions about the child's competence. The perception of competence, in turn, leads to an emotional state that either supports or hinders the continued pursuit of a task or goal (Weiner, 1985). Perceived academic competence was linked in subsequent research to the desire for mastery and academic challenge (Harter, 1981). Harter's competence scales have been used widely in other research on student motivation and educational outcomes. Higher academic and social competence has been linked to intrinsic motivation, school engagement and better grades in school (Bandura, 1993; Wentzel, 1991).

A sense of competence is also a critical component of self-directed behavior according to many theories in social psychology. Self-determination theory (SDT) (Deci & Ryan, 1985; Ryan & Deci, 2000) describes competence as one of three elements that make determine if behavior is intrinsically or extrinsically motivated. Whether a student feels personally motivated to actively participate in the classroom context is dependent on whether they feel competent to do so, whether they believe they have control over their own behavior (autonomy), and whether they feel connected to others in the classroom (relatedness). The perception of having some mastery and control over academic and social tasks are theorized to lead to the development of self-directed engagement behavior in the classroom (Ryan & Connell, 1989). Students who believe they are capable and in control of their behavior are more likely to enjoy active participation in academic and social activities at school.
The social context also plays an important role in developing motivated and engaged behavior. Ryan and Deci (2000) suggest that having secure and warm relationships with significant others (parents, teachers, peers, etc…) provides additional support for the development of self-directed engagement behavior. Osterman (2000) further theorizes that children and adolescents have an innate need to feel a sense of belonging in the school setting. A positive relational context provides opportunities for encouragement, feedback, and recognition in times of success. Children who perceive parents and teachers as being involved and supportive of their autonomy are more likely to report feelings of competence, autonomy and control (Grolnick, Ryan & Deci, 1991; Skinner & Belmont, 1993; Guay, Boggiano, & Vallerand, 2001). In turn, classroom engagement and academic performance are also influenced by a sense of relatedness to schools and teachers (Furrer & Skinner, 2003).

Perceived control also plays a central role in developing a sense of competence. Through experiences in the classroom, students perceive whether they have control over their own academic outcomes. Those who perceive themselves as agents capable of influencing their academic success through effort and engagement are more likely to develop academic self-efficacy. Children who experience a sense of control in the classroom are also more actively engaged and experience greater academic success (Skinner, Wellborn, & Connell, 1990; Skinner 1996). In his control-value theory, Pekrun (2006) suggested that the sense of control that students feel about particular academic tasks interacts with the appraisals and feedback they receive to predict achievement emotions. If their evaluation of their own performance is positive and they perceive that they had control over the outcome, then they may feel joy or pride; likewise a negative evaluation with low perceived self-control may lead to feelings of hopelessness. The emotions themselves, along with changes in feelings of competence, may drive changes to the
student's academic behavior. For instance, students who feel efficacy and control may be inclined to work harder after receiving negative feedback.

A child's understanding of his or her own competence and control also leads to different understanding about the nature of ability (Dweck, 1986; Blackwell, Trzesniewski, & Dweck, 2007). According to Dweck, an implicit theory of intelligence informs a person's understanding about the effects of effort and hard work (Dweck, 2002). The belief that intelligence or ability is trait-like and fixed may lead students to avoid challenging tasks, as challenge indicates a lack of intelligence or ability. A malleable (or incremental) theory of intelligence means that intelligence and ability can be changed through increased effort and practice. Having an incremental view might lead children to accept academic struggle as resulting from a lack of effort, and that success can be achieved through work. This has significant consequences for the development of engagement as students begin to receive academic and social feedback from teachers and peers.

*Expecting Success and Valuing School*

Expectancy-value models for how and why individuals predict and value success have become an important piece in describing the motivational behavior of children in schools (Atkinson, 1957; Eccles et al., 1983; Wigfield & Eccles, 2000; Pekrun, 2006). Expectancies for success follow naturally from students' own sense of self-efficacy, control and the performance feedback they receive. Children who experience success and consider themselves to be efficacious in a particular area learn to expect good results and positive feedback for their effort. Success alone is not always enough, however. Phillips (1987) described how highly competent children were more likely to underestimate their academic abilities regardless of grades. Parent appraisal was found to be an important factor as well, suggesting that children need positive feedback to believe that their success is self-caused. Children who struggle consistently and feel
less control over the outcome of their academic work may come to expect failure in a particular
domain. Some evidence exists that there is reciprocal causal influence between student’s
achievement and their academic self-concept in elementary school, although results have been
inconsistent to date (Guay, Marsh & Boivin, 2003).

As with competence and control, children who learn to expect success in academic and
social aspects of school are also more likely to value school. The second part of expectancy-
value theory details distinct types of values that children may hold for a given task based on their
expected success. If a skill is deemed inherently interesting it is said to have intrinsic value,
while tasks that are useful have utility value. Eccles and her colleagues (1983, 1989; Wigfield &
Cambria, 2010) suggest that the value that students place on their own academic success directly
influences their willingness to engage in school activities. Analyses by Denissen, Zarrett and
Eccles (2007) found that correlations between achievement and self-concept for ability become
more similar from first through twelfth grades, and that interest and self-concept become much
more aligned as well. Thus as students experience success, they have both a greater belief in their
own ability and a higher interest in their best subjects.

Developmental Change in Engagement

Normative change in student engagement across elementary and middle school has been
documented. Young children typically report higher efficacy and make more positive self-
evaluations about their own abilities in academic and social domains (Dweck, 2002; Eccles et.al.,
1993). Young children are also less likely to have a well-formed conception of the nature of
ability and intelligence compared to older groups (Dweck, 2002). Preschool children are less
likely to focus and make judgments about peer academic abilities, instead focusing more on
social characteristics (Stipek & Tannatt, 1984; Stipek & Iver, 1989). Finally, younger children
tend to use fewer social comparisons to peers when making decisions about their own academic abilities (Ruble et.al., 1980).

A gradual developmental decline in self-reported competence appears to begin around the second or third grade and continues through middle school (Wigfield et.al., 1997; Eccles & Wigfield, 2002; Anderman, Maehr & Midgely, 1999). Ability conceptions shift late in elementary school such that children and young adolescents become more likely to report that they see cognitive ability as stable and trait-like (Dweck, 2002). At the same time, academic self-concept gradually declines and stabilizes as students become exposed to academic struggle and compare ability to that of peers. A multi-cohort study conducted by Guay and colleagues shows that academic achievement does inform academic self-concept, but becomes a much weaker predictor as children age (Guay et.al, 2003). While younger children tend to have inflated conceptions of their own ability and are more resilient in the face of negative feedback, older children and adolescents become increasingly aware of how their abilities compare to that of peers. This often leads older children to have poorer self-concepts of academic ability than is actually warranted based on their performance and teacher feedback (Dweck, 2002).

A recent study measuring growth curves of student’s sense of competence found that a gradual decline in reported self-competence was evident from first through twelfth grades. Jacobs and colleagues (2002) used an HLM approach with multiple cohorts of children to measure change in self-reported competence in reading and math. For all domains, competence was highest in first grade and began a gradual decline by third grade, a trend which continued for math and reading before leveling off near the beginning of high school. Thus, in exploring the effects of peer status on academic self-concept, understanding this developmental change will be a necessary step.
**Peer Influences on Engagement**

Peers become increasingly important as both a context for socialization and as a reference group for social comparisons during late childhood and adolescence. Ryan (2000, 2001) in particular has focused on this context as important for the development of achievement motivation during adolescence. There is some evidence to suggest that, through socialization, peer groups can positively or negatively impact school task values for other group members (Ryan, 2001). Indirect relationships have also been found between peer group membership and acceptance to academic self-concept and school achievement, through links with pro-social behavior and connectedness (Wentzel & Caldwell, 1997; Guay, Boivin & Hodges, 1999a). This section describes the role that peer groups play in the development of school engagement in elementary and middle school children, as well as the role that peer status plays in these outcomes.

**Socialization and Social Comparison**

Socialization is a process by which peers and peer groups become more alike. Socialization is particularly useful in studying the peer group context, as the change in children’s achievement-related dimensions can be compared to the group level over time (Ryan, 2000). One potential mechanism of peer socialization is the modeling of particular achievement behaviors. Experimental work from Schunk and Hanson (1985) showed that peer modeling of skill acquisition improved children’s own self-efficacy beliefs and achievement outcomes. Negative peer socialization also occurs in large group contexts. For instance, Juvonen and Murdock (1995) found that 8th graders had significantly different views on the social value of school effort than did younger children. Middle schoolers were much more reticent to show high levels of effort
due to the belief that it would make them less popular with peers. Thus socialization among friends and peer groups can have both positive and negative influences on achievement motivations and behaviors.

Ryan (2000, 2001) suggests that socialization effects of peer groups partially explain changes in motivation and engagement during middle school. Ryan used social network analysis to identify middle school peer groups (7th grade) and compare group-level expectancies for success, intrinsic and utility values for school, and grades. Significant differences existed between peer groups in their expectancies and values for school. Furthermore, when measured across time, she found that peer groups could significantly change the achievement and intrinsic value of school for individual members during the school year. Students who hung out with peer groups that disliked school were more likely to experience a significant decrease in their own intrinsic values of school. Peer groups in the study held little sway over utility values or individual expectancies for success. Students may continue to recognize the utility of academics as well as their own competencies regardless of peer group influence (Ryan, 2001).

Engagement behavior is also subject to socialization effects of peers. Kindermann (1993) examined natural peer groups as a context for changes to teacher and reports of school engagement in 4th and 5th grade students. The study found that both individual and group-level engagement scores changed from the beginning to end of the school year, and by year’s end the groups became more homogeneous on engagement scores. This makes sense in the context of Ryan’s (2001) finding that peer groups influenced adolescent’s intrinsic values about school. The result is that peer socialization processes can have an indirect but significant effect on individual academic achievement through socialization of engagement behavior (Kindermann & Skinner, 2009). Kindermann (2007) also examined peer groups among an entire cohort of 6th graders in a
single town and assessed longitudinal effects of peer group socialization on school engagement. Peer group engagement levels predicted changes in engagement for individual group members toward the group mean. These findings remained significant even after accounting for the level of parent and teacher involvement and student’s previous levels of engagement.

Prosocial behavior often results from having friends, and may act as a mediator between peer social acceptance and academic outcomes. A study by Wentzel, Barry and Caldwell (2004) test an indirect model of prosocial effects on changes in school adjustment by following children from 6th through 8th grade. Having a reciprocated friendship in 6th grade significantly predicted more prosocial behavior, higher GPA and lower reports of emotional distress. Having prosocial friends in 6th grade did not predict GPA or learning effort, but did predict more prosocial behavior in 8th grade. Prosocial behavior in 8th grade subsequently predicted higher levels of school motivation, effort, and subsequently GPA. Indirect socialization effects have also been considered by Berndt and Keefe (1995), who found that the quality of friendship with generally disruptive friends predicts changes in adolescent’s own behavior, school involvement and GPA.

Social comparisons are a second mechanism through which peers can influence self-concept and engagement. As children age, they tend to notice peer behaviors and abilities and develop opinions about their own place in the academic and social hierarchy based on these social comparisons. Dweck (2002) notes that as children observe one another in the classroom context they begin to perceive themselves as better or worse at academic and social tasks compared to their peers. Children must be aware of each other’s performance and the feedback that they’re receiving (grades, comments from teachers or peers) for social comparison processes to be evident. As such, social comparisons become particularly pertinent in older children as they
are able to make more accurate comparisons between their ability and that of peers (Butler, 1989, Dweck, 2002).

Social comparisons have consequences for children’s conceptions about their own academic competence during late elementary school. In a one-year longitudinal study, Altermatt and Pomerantz (2005) found evidence that having high and low-achieving peers made a difference in how students perceived their own ability. Children in 5th, 6th and 7th grades were measured on their changes to achievement and motivational beliefs. Achievement during the fall of the school year was a strong and significant predictor of self-efficacy and competence beliefs during spring of the same year. Having high-achieving peers predicted better academic outcomes for all children, but the changes to school importance and competence beliefs were different for high and low-achieving kids. A significant negative change in competence beliefs was seen in low-achieving children whose best friends were among the high-achievement groups regardless of changes to their own performance. Thus, best friends serve as an important comparison group as children and adolescents form opinions about their own abilities regardless of actual performance. The effects of social comparison processes on self-evaluation of ability appears to be strongest between reciprocated friends and less so between other peers (Guay, Boivin & Hodges, 1999b).

Molloy, Gest and Rulison (2011) found further evidence peer influence on changes in student engagement in a sample of 5th and 7th graders. The authors tested the role of three types of peer relationships (friendships, interaction dyads and groups) on fall-to-spring changes in student’s engagement and academic self-concept. Both socialization and social comparison processes were examined as possible contributors to change. Socialization effects on student effort and academic self-concept were strongest in the 7th grade sample. Social comparison
effects on self-concept were also evident in both 5th and 7th grade students. Interactions effects showed that students who had poorer teacher-rated skills had a poorer academic self-concept if their peers were rated as highly skilled. Overall the most robust evidence for peer influence effects came for the 7th grade sample, with interaction dyads and groups becoming more salient as reference groups for comparison. Thus this study indicates that there are clear developmental differences in the way that peers interact during early adolescence, but that peer influence is still significant even in late elementary school.

Peers play a critical socializing role in the lives of children and adolescents. As children age into late elementary school and transition into middle school, peers also serve as a reference point for their own academic skills and abilities. Peer status is another mechanism that shapes the daily interactions between peers and may have consequences for their long-term motivation and engagement in the classroom. The next section explores literature about the role of peer status in the development of competence and engagement of elementary school students.

Peer Reputations and School Engagement

The influence of socialization and comparisons are a natural result of children spending substantially more time with peer groups in school. As children understand one another and the roles that each student plays in the social structure of the classroom, kids naturally develop reputations among their peers based on their academic and social abilities. Over time children develop opinions of which classmates are the best at reading and answering challenging questions, which they enjoy playing with the most and which children are socially awkward or disliked. The academic and social reputations that children develop with their peers inform the types of interactions that students have with their classmates and have likely reciprocal effects on personal feelings of competence and ability.
Studies of small group work in elementary schools have highlighted how peer academic and social status affects the interactions that students have with their peers. Elizabeth Cohen described group work among children as laden with “status characteristics” that children use to categorize and organize their group into a hierarchy (Cohen, 1994). Examples of status characteristics are sex, race, age relative to peers, or reading and writing abilities. Groups use these characteristics to categorize children into an informal hierarchy wherein the highest status children are expected to also be the most competent. Having a status as a highly competent student is not necessarily tied to actual ability, and may result in differential treatment for children of the same ability level. Cohen explains that behavioral inequalities are the end result of the generalized expectations that peers have for each other’s success (Cohen & Lotan, 1995; 1997). Having a reputation as a quiet student or as a poor reader may lead peers to treat a child as if they are incompetent, for instance by rarely seeking their help or opinion on academic matters. Likewise, having a status of being generally liked or disliked affects the type of positivity of interactions with peers and may lead children to feel more or less competent socially.

The present study focuses attention on both academic and social reputations with peers as catalysts for change in student engagement. While many other types of reputation exist, these two categories represent related but distinct aspects of peer reputation. Academic reputations in elementary represent peer opinion about a child’s academic skills, while social preference is focused on how well liked versus disliked children are relative to their peers. A substantial body of research has explored the effects of each category, and often they are considered together.

Peer Academic Reputation

Peer academic reputation is shaped by the opinions that peers hold about each other's ability and is reflected in interactions that peers have about academics. Differential treatment
based on academic reputation has been observed in elementary classrooms. Sage and Kindermann (1999) studied one classroom of 5th graders to examine how natural behavior contingencies might act as a mechanism of change in student’s behavioral engagement in the classroom. Students with higher teacher-rated motivation were more likely to receive peer support and approval when participating and exhibiting on-task behaviors. Low-motivated children received little peer support for their on-task behaviors but approval from their peer group during off-task behaviors. While the study doesn’t directly address the reputation that each student has with peers, the findings suggest that patterns of peer interaction may develop around a student’s profile of classroom engagement. It also represents a form of socialization wherein students who are typically less engaged receive positive reinforcement to continue to be less engaged. Differential treatment by peers may have a reinforcing effect on each student’s belief about their own competence and ability, and may encourage more or less engagement based on peer reactions.

Altermatt and colleagues (2002) lend credence to the idea that comments by peers are influential and predictive of changes in children’s academic self-concept. The discourse between peers in early elementary school was recorded and used to predict subsequent changes in academic self-concept. Children who were frequently asked by peers about their progress on individual assignment work were more likely to report higher academic competence the following year. Thus the nature of comments or interactions between peers influences how children perceive their own abilities.

The effect of academic reputation with peers has also been explored longitudinally in multiple school contexts. A study by Gest, Domitrovich and Welsh (2005) explored the nature of peer academic reputation (PAR) among a group of 400 third, fourth and fifth grade students.
Both positive and negative evaluations about the academic ability of students were found to predict changes in both academic self-concept and teacher ratings of effort and ability. Students who were rated as better at reading and consistently correct in their answers were more likely to view themselves as competent, regardless of their actual ability level. A follow-up study examined the bidirectional influence of PAR and academic self-concept across multiple years (Gest et.al, 2008). Academic reputation was found to consistently and positively predict changes in self-concept, effort in the classroom and student GPA across multiple time points, even after controlling for previous levels of these outcomes. However there was little evidence to suggest that changes in academic self-concept acted as a mediator between PAR and measures of engagement and achievement.

Chen et.al (2010) further explored the role that academic reputation plays in predicting outcomes over the course of elementary school. In a sample of low-achieving children, the authors described a longitudinal mediation model in which PAR during grade 2 predicted achievement in grade 5 through its relationship to perceived competence in grade 3 and engagement in year 4. Findings from this study add merit to the argument that peer academic reputation has both direct and indirect influences on engagement and achievement through changes to perceived competence. Hughes and Chen (2011) expanded on these findings by considering the relationships between peer social preference, peer academic reputation and teacher-student relationship quality across multiple years of elementary school. This study found that social preference and relationships with the teacher had bidirectional effects on each other across years. Relationship quality with the teacher significantly predicted changes in PAR and PAR subsequently mediated the relationship between teacher-student relationships and future academic efficacy. Thus PAR held some influence on the changing self-conception and
engagement in the classroom, and teachers were partly able to influence how peers perceived each other academically.

Whether findings about peer academic reputation reflect unique knowledge that students have about their peers, or whether it represents some reinforcing experience of the peer context remains to be seen. However, in light of the findings of Hughes and Chen (2011), it’s clear that the peer context and status with peers becomes increasingly relevant during the elementary years. In the context of Cohen’s work, there is reason to believe that children have different experiences based on their competence status. Peer academic reputation may also provide students with a reference for their own abilities and ultimately influence how their cognitive self-conception develops (Skinner et al., 2008; Dweck, 2002). Questions remain about whether PAR plays a similar role for young children as for older children. Most of the research cited here has focused only on children in late elementary school. Furthermore, the role that PAR plays on student’s own self-reported motivation and enjoyment of school have yet to be fully explored.

Peer Social Status

Peer social reputation represents a separate, but related, aspect of the classroom social context that affects student’s connection to school. Research about the effects of social status considers how well liked vs. disliked children are in the classroom, relative to their peers. Several different conceptions have emerged in how to best to describe social status in the classroom. Social preference is described by Dodge, Coie and Coppotelli (1982) as the difference between peer nominations of liking and disliking. Peer social preference is significantly correlated with student self-concept. Students who are high in social preference relative to their peers are more likely to perceive themselves as socially competent, while
rejected children (those whose social preference is substantially negative relative to peers) typically have poorer academic and social self-conceptions (Boivin & Begin, 1989).

Positive social status and acceptance contributes to student engagement by promoting a sense of relatedness among peers and a positive connection to the classroom. As noted earlier, Self-Determination Theory suggests that having a sense of relatedness is a critical element in the development of intrinsic motivation and engaged behavior in the school context (Deci & Ryan, 1985; Ryan & Deci, 2000; Osterman, 2000). For instance, Furrer and Skinner (2003) have shown that this sense of relatedness to peers uniquely contributes to changes in emotional and behavioral engagement. Children in late elementary school and middle school were more actively engaged and performed better when they felt supported by peers. Supportiveness of teachers became less important during young adolescence, but the influence of peers remained significant.

The benefits of positive peer social contact are also evident in theories and literature on bonding and connectedness in school. According to the Social Development Model, children and adolescents who have an opportunity to consistently engage in positive and prosocial interaction with peers are more likely to build strong bonds with peers and the social context of the classroom (Maddox and Prinz, 2003; Catalano et al., 2004). The influence of peers grows as children enter the school context and the nature of their relationships shapes their social skills and self-competence. Peer support and liking is associated with greater expectancy for success and valuing for school in young adolescents as they enter middle school - these in turn are predictors of outcomes such as academic effort, initiative and grades (Goodenow, 1993; Danielsen et al., 2010).
Social reputation with peers is especially relevant to the enjoyment and engagement of younger children in school. Kindergarteners who make maintain more friendships are also more likely to have sustained favorable perceptions of their classroom and subsequently performing better in school (Ladd 1990). Positive peer relationships and high social preference are predictive of children feeling connected to their peers and classroom - connectedness is, in turn, predictive of feelings of academic competence (Guay, Boivin & Hodges, 1999b). Acceptance by peers in middle and late elementary school has been shown to have direct and indirect effects on academic performance through its longitudinal relationship to both academic self-concept and to internalizing symptoms (Flook, Repetti & Ullman, 2005). Children who are unable to form and maintain bonds to classroom peers are at an increased risk for poor self-evaluations of academic as well as social ability.

Just as being well-liked has important consequences for student engagement and self-concept, so too does being disliked or rejected by peers. Studies have detailed the negative impact that friendlessness and rejection have on children's school adjustment and academic outcomes (Ladd, Kochenderfer & Coleman, 1996; Ladd, Herald-Brown & Reiser, 2008). Bierman (2004) notes that rejected children often have social or behavioral issues that make them less likely to make and maintain friendships; this in turn brings on loneliness or anxiety that may make engagement and motivation in school less likely. Having few positive connections to peers is associated with reduced social competence and is likely to make friendless, rejected or bullied children less competent and efficacious academically (Vandell & Hembree, 1994). Peer rejection in late elementary school has been used to directly predict changes in student’s academic outcomes and school adjustment. Buhs (2005) found that fifth graders who were rejected or excluded by their peers experienced a significant within-year decline in their
academic and social self-concept, and subsequent classroom engagement in the spring. Reduced classroom participation has been found to be a long-term result of early peer rejection (Buhs, Ladd & Herald, 2006).

**Areas for Exploration**

The influences of both academic and social reputations with peers are evident in the diverse body of literature presented here. A few studies have tried to address the role of both types of reputation in predicting changes to student self-concept and engagement. Gest, Domitrovich and Welch (2005) used social preference in addition to PAR in predicting academic and social self-concept, and global self-worth in children in middle and late elementary school. Both academic reputation and social preference with peers were significant predictors of different aspects of student self-concept: PAR had robust effects on changes in academic self-concept while social preference uniquely predicted social self-concept. Thus different aspects of peer reputation may be expected to contribute to student engagement in different ways – academic reputation influencing self-evaluation and academic performance, and social reputation contributing to social self-evaluation and general bonding with the classroom context. The combined and individual roles of each type of peer reputation on changes in a range of engagement outcomes are a focus of this paper.

Measures of engagement behavior have typically focused on teacher reports of effort, skill and outcomes such as grades. However, there is room for measures that use student report to address general changes in motivation and connection to the school atmosphere. Academic reputation has been the strongest predictor of changes in teacher-rated effort, but less is known about how academic and social reputations may influence student-rated engagement. For the
purposes of this study we include two such self-report measures that broadly address perceived emotional and cognitive aspects of engagement with the classroom.

Many studies have also documented developmental change in measures of engagement and self-concept during the late elementary and middle school years, but less is known about the differences across the range of elementary ages. Few studies have addressed potential differences between children in first and fifth grades on the effects peer reputation on patterns of engagement. With a large sample that is evenly split among early, middle and late elementary school, the present study allows for mean-level comparisons and interactions that might explain developmental differences in peer status and engagement processes.

Finally, the role of self-concept as a mediator of the relationship between peer status and engagement outcomes is not well understood. Gest et.al (2008) did address the question of whether academic self-concept mediated the relationship between PAR and academic outcomes – results from these analyses provided limited support for this hypothesis. However, more recent conceptions of mediation analysis suggest that the establishment of a direct pathway between the independent and dependent variable is unnecessary for the indirect effects to be considered significant (MacKinnon, 2008). This study extends previous research by exploring pathways of mediation through changes in academic and social self-concept.

The Present Study

The purpose of the present study explores the role that peer academic reputation and social status play in the development of self-conceptions and student engagement across the school year. Self-determination theory suggests that competence and relatedness are essential to the development of motivated and engaged behavior (Ryan & Deci, 2000). This is echoed by theorists who see engagement as a complex construct which is driven by interactions between
behavior, emotion and feedback (Skinner et.al, 2008). A substantial body of evidence shows that peers facilitate the growth of academic and social competence during the elementary school years, and that engagement evolves partially as a result of peer interaction. Peer reputation and social status are hypothesized influence the development of engagement both directly and indirectly through development and reinforcement of student’s internal self-concept.

Using a sample of students in first, third and fifth grade classrooms, we test the predictive power of peer social status on within-year changes to three measures of student engagement. The study's hypothesized model of the influence of peer status on changes in self-concept and engagement is presented in Figure 1.

This model suggests that peer academic and social reputation in the fall can each uniquely predict within-year changes to measures of student engagement. Engagement in this study is measured by both teacher reports of student effort and by student-report measures about their interest, enjoyment and connection to their classroom. Changes in academic and social self-concept are also considered in the model as mediators of the relationship between peer status and student engagement. Finally, grade level in this study is hypothesized to act as a moderator of the influence of peer status on both engagement outcomes and changes in self-concept. Formal questions and hypotheses of this study are presented below.
Figure 1: Hypothesized influence of Peer Status on Self-Concept and Engagement

**Peer Feedback**
- **Fall**: Peer Academic Reputation
- **Spring**: Peer Academic Reputation

**Competence**
- **Fall**: Academic Self-Concept
- **Spring**: Academic Self-Concept

**Engagement**
- **Fall**: Engagement (Teacher Report)
- **Spring**: Engagement (Teacher Report)

**Relatedness**
- **Fall**: Social Self-Concept
- **Spring**: Social Self-Concept

**Peer Feedback**
- **Fall**: Peer Social Reputation

**Question #1:** Do both academic and social peer reputations predict within-year changes to student engagement?

A substantial body of literature has been presented which suggests that academic and social reputations influence the likelihood that children will feel connected and be more actively engaged in the classroom context (Skinner et al., 2008; Gest et al., 2008; Gest, Domitrovich and Welsh, 2005; Guay, Boivin & Hodges, 1999a; Boivin & Begin, 1989). Few studies have explored the contribution of academic and social status together as predictors within-year change on self-report measures of student engagement. Based on previous findings, we expect peer academic reputation to play the largest role in predicting changes to teacher-rated effort.
Furthermore, we expect peer academic reputation to significantly predict changes in measures related to student motivation and enjoyment of school – Striving and Affect.

As peer social preference is a more general measure of liking by peers, we expect this social preference to predict a small amount of change in teacher-rated effort, but for its biggest impact to be on the self-report measures of engagement. We believe that social and academic reputations are related but distinct, and therefore we hypothesize that when paired together, each will uniquely predict change in each of the engagement outcomes.

**Question #2: Do changes in academic and social self-concept mediate the longitudinal relationship between peer reputations and engagement?**

Longitudinal research has documented the influence of changes in academic self-concept on student’s effort and enjoyment in school. Research has also established a link between peer status in elementary school and changes in self-concept. Evidence to this point is limited on whether changes in self-concept mediate the influence of peer status on changes in engagement. Gest et.al (2008) found some suggests that such a path may exist in elementary school children. Extending on this finding, we investigate whether the relationship between PAR and measures of engagement is mediated by changes in academic self-concept. We also test whether the relationship between peer social reputation and student engagement is mediated by changes in social self-concept. We hypothesize that different types of peer reputation represent different social experiences that children have with their peers, and thus are likely to influence different aspects of their self-concept. Likewise we believe that each aspect of student self-concept will affect student engagement differently – we hypothesize that social self-concept is likely to have the strongest influence on student reports of engagement and enjoyment of school, while academic self-concept will likely influence teacher ratings of effort as well.
Question #3: What developmental differences exist across grade levels on student engagement, self-concept and the longitudinal relationship between peer status and engagement?

Younger children are typically more engaged and interested in school than their older peers, and therefore we expect to find significant differences between our first, third and fifth grade samples. As gradual decline in engagement and motivation typically begins around the middle of elementary school, we expect the first grade cohort to stand out compared to the third and fifth grade cohorts. First, we hypothesize that the means of each of the three measures of engagement to be highest for first graders. Second, we hypothesize that children in the first grade cohort are likely to have higher opinions of their peers, both socially and academically. Finally, we expect to find significant differences by grade in how peer academic and social reputations influence changes in self-concept and engagement. Specifically we hypothesize that fifth graders will be influenced most by negative academic and social evaluations from their peers, and that this will be reflected in grade by peer status interactions.
Methods

Classroom Peer Ecologies Project

This project used data from year 2 (2009-2010) and year 3 (2010-2011) of the Classroom Peer Ecologies Project. Data were collected at three waves during each school year: Early fall (September – wave 1) late fall (November/December – wave 2) and spring (April – wave 3). At each time point, students completed surveys about their opinions about school, perception of their own characteristics, and characteristics of their peers. Information about peer networks was also collected at each wave, with students nominating classmates on a range of social and cognitive abilities and traits. Teachers also completed a survey at each time point about characteristics of their each of their students. Only waves 2 and 3 are included in the present analyses. For the purposes of the results, wave 2 is listed as the “fall” time point and wave 3 is listed as the “spring” time point.

Sample

Participants in this study were enrolled in 96 1st, 3rd and 5th grade classrooms at rural and urban elementary schools across Pennsylvania and Illinois. There were 34 first grade, 28 third grade, and 34 fifth grade classrooms. A total sample of 2116 children were listed on the rosters of the participating classrooms, however not all families elected to have their child participate in the study. Of the full sample, 1626 were listed as participants at wave 2 of the study, a response rate of approximately 77%. Of that group, we included only those children who were participants remaining in the same classroom with the same teachers from fall to spring. After removing students who did not meet these criteria, a final sample of 1523 students was included for these analyses.
Students in the study were split evenly by gender (51% female), and grade (532 first graders, 419 third graders, 572 fifth graders). A larger proportion of the sample came from Illinois classrooms (59.3%) as a majority of the classrooms were in Illinois (57 compared to 39 in PA).

Measures

Measures for this study include peer nomination data, student self-reports and teacher reports of students. Predictors were measured in the fall while outcomes subject to change were measured in both fall and spring. Table 1 provides basic descriptive data for each measure at each time point that it is included in the study.

[TABLE 1 HERE]

Peer Reputations A series of questions asked students to nominate classmates who they liked most and least and to nominate peers based on academic and social characteristics. Students were provided with rosters listing all of the boys and girls in their classroom and were free to nominate as many peers for each type of question as they desired. Two peer reputation measures were created using the student nomination data: Peer academic reputation and social preference.

Peer Academic Reputation (PAR) was calculated for each child using four nomination items filled out by classmates. Two items assessed the positive evaluations that peers had about the child’s academic ability (“good at reading”; “usually knows the right answer when the teacher asks a question”) and two items assessed the negative evaluations (“not good at reading”; “usually does not know the right answer when the teacher asks a question”). Each item had a total nomination range from zero (no nominations) to the total number of possible nominators in the classroom. Previous research shows that both the negative and positive PAR questions
provide unique predictive power for grades and teacher-rated skill (Gest et.al, 2008; Gest, Domitrovich & Welsh, 2005). Proportion scores were calculated as the number of nominations received out of all possible nominations (e.g. 10 nominations/20 nominators = .5 proportion). The proportion scores were then averaged together for the two positive nominations and the two negative nominations; this created two 2-item scores that represent the average positive and average negative peer academic reputation. The negative proportion was then subtracted from the positive proportion; this provided a single proportion score centered at 0 with a range from -1 to 1. The approach used to combine these items into a single consistent scale is slightly different from previous literature on PAR (Gest et.al. 2008), but provides for easier interpretation. This method allows for distinction between students who have an overall negative PAR (<0) to those with an overall positive PAR (>0). The mean of PAR across all students is 0.18 with a standard deviation of 0.37, and is normally distributed (skew -0.21).

A second scale of peer reputation, peer social preference was calculated using student nominations of the children they “like most” (LM) and “like least” (LL). The sum of each of the LM and LL nominations was calculated for each student; these scores were then standardized across all students. Peer social preference was calculated by standardizing the difference between these two scores \[ z(z_{LM} - z_{LL}) \].

**Attitudes toward school: Striving and Affect** Students attitudes toward school were measured with two scales: Affect and Striving. Items for these scales were adapted from measures of student bonding and motivation (Murray & Greenberg, 2000; Hawkins, et. al., 2001; Ryan, 2001) Affect measured student’s general feelings about school. Affect was calculated using 8 items (scored 1-5) that formed an internally consistent scale (\( a = .86 \)). The items for this scale were: “I like going to school”; “In the morning I look forward to going to school”; “My school is
a nice place to be”; “Schoolwork is boring to me” (reverse scored); “I feel like I really belong at school”; “I like doing schoolwork”; “I like class activities”; and “Schoolwork is interesting to me”. A second set of 8 items (scored 1-5) were used to create a scale of student enjoyment and self-reported work ethic called *Striving*. The 8 items included in this scale are: "I feel sure about my schoolwork”; "Doing well in school is important to me”; "I keep working on assignments until they are done”; "I work hard at school”; "I expect I will do well in the future”; "Kids in my school have a good chance in the future”; "I do extra schoolwork on my own”; and "I do the best I can at my schoolwork". The *Striving* scale has moderate internal consistency (a = .73). *Striving* has a high negative skew (-1.18 and -1.19 at wave 2 and wave 3 respectively), and therefore was exponentiated to improve the normality of the distribution for these analyses.

*Teacher-rated Effort* Teachers were asked to rate the effort that each student in the class shows toward academics and schoolwork. The teacher-rated effort scale is averages five items, each scored on a 5-point Likert-type scale (1-never, 5-always): "Tries hard at school”; "Does the best they can do at their schoolwork”; "Shows poor effort” (reversed); "Completes assignments”; and "Works hard".

*Academic and Social Self-Concept* Two measures of student’s self-concept about their own cognitive and social abilities were included during both fall and spring data collection. Both scales are established measures developed by Harter (1982) that assess student self-competence. Each scale is 4 items; each item asks children to choose between two traits that may describe them and decide how strongly they feel it describes them. Items are then averaged together to form 4-point scales. Cognitive competence has students choose between the following sets of descriptions: “Very good at schoolwork” OR “worry about whether they can do schoolwork”;
“feel like they are as smart as other kids” OR “wonder whether they are as smart”; “almost always figure out the answers” OR “have trouble figuring out answers”; and “do very well in their classwork” OR “don’t do very well in their classwork”. The social competence scale includes the following prompts: “Have a lot of friends” OR “don’t have a lot of friends”; “Hard to make friends” OR “easy to make friends”; “Wish that more kids liked them” OR “feel that most kids like them”; “Popular with others” OR “not very popular”. Some items in each scale were reverse coded prior to combining them such that a low score (1) on the scale represented a poorer self-concept and a high score (4) represented a greater self-concept. The internal consistency of the two scales were low to moderate (α=.61 for cognitive and .70 for social); however the scales have been used extensively in prior literature to describe student’s self-concepts.

Analytic Strategy
All models use standard Ordinary Least Squares (OLS) regression using the SAS proc reg command. Measures of peer status were calculated in the fall and used as predictors of spring engagement. Fall measures of engagement are included to account for fall-to-spring stability in the measure and to focus on predicting the changes with the peer status measures. In all models, sex and grade are included as control variables, with grade level centered on third grade.

To address the role of self-concept as a mediator of peer status influence on engagement, residualized gain scores were created for both academic and social self-concept by regressing fall self-concept onto spring self-concept and saving the residuals. These gain scores were then used as the outcome and predictor when measuring the ‘a’ and ‘b’ pathways in the mediation analyses.
Mediation analyses follow the Baron and Kenny (1986) method and the indirect effect is calculated for each significant test of mediation.

Finally, the effects of grade-level were tested by comparing mean levels of student engagement and by including interaction terms between grade level and each of the measures of peer status. Results compare students in each grade for potential differences in the slope of peer status’ prediction of student engagement. Additionally, stability of engagement and self-concept measures were calculated separately for each grade to compare against models about the development engagement and self-concept in elementary age students.
**Results**

First, we analyzed correlations among each of the fall and spring variables included in the study. Table 2 provides the zero-order correlations among each of these variables. Significant correlations appear between both measures of peer reputation and each of the three measures of student engagement. High correlation between the fall and spring time points suggest that teacher-rated effort is relatively high in stability within the school year. The weakest correlations appear between student's social self-concept and self-reported Affect for school.

[TABLE 2 HERE]

*Question #1: Do both academic and social peer reputations predict within-year changes to student engagement?*

Ordinary least-squares (OLS) regression was used to test the hypothesis that peer reputations predict fall-to-spring changes in student engagement. A step-wise approach was used to explore the individual and joint contributions of peer academic reputation and peer social preference. Table 3 provides the output for each set of models for each of the three engagement outcomes. All reported betas are standardized for easier interpretation.

At step one, stabilities for each of the three outcomes was entered, along with sex and grade as control variables. Step two was separated into two parts to determine the individual and joint effects of each type of reputation. Step 2a indicates the standardized beta for each type of reputation when entered individually with the previous controls. Step 2b provides a complete model with both peer status measures entered as predictors, controlling for stability, sex and grade level. Finally, step 3 includes interaction terms included for grade by peer status interactions; these were used to address the third part of the study.
Results from this set of analyses show that peer academic reputation is a strong predictor of changes in teacher-rated effort, even after controlling for stability, sex and grade. Although peer social preference initially predicted this change as well, this significance disappears in the combined model. Similarly, both academic reputation and social preference show high initial predictive power with student-reported Striving. When paired together, peer academic reputation drops to non-significance, but peer social preference continues to significantly predict changes in Striving; a standard deviation increase in peer social preference predicts an increase of about .06 standard deviations in Striving in the spring. Finally, social preference is a significant predictor of fall to spring changes in Affect. Peer academic reputation did not predict fall-to-spring changes in Affect.

At step 3, interaction terms between gender and both measures of reputation do not significantly predict fall-to-spring changes in engagement measures above and beyond the controls and the measures of peer academic reputation and social preference. The one exception is a small but significant interaction term for the effect of grade and peer social preference on changes in teacher-rated effort. The negative interaction suggests that peer social preference predicts more fall-to-spring change in teacher-rated effort in earlier grades. Grade effects on both Striving and Affect indicate that there is a significant difference in intercepts between earlier and later grades on these two measures. Results from these analyses suggest that measures of peer academic and social reputation do significantly predict within-year changes to measures of engagement.
Question #2: Do changes in academic and social self-concept mediate the longitudinal relationship between peer reputations and engagement?

Mediation analyses were conducted to determine whether measures of self-concept mediate the relationship between peer status and student engagement. Table 4 shows the results of these analyses. Change in academic self-concept was tested as a mediator for the relationship between peer academic reputation (PAR) and the engagement outcomes. Change in social self-concept was tested as a mediator in the relationship between peer social preference (PSP) and the engagement outcomes. For these analyses, PAR and PSP were considered separately as predictors.

The mediation analyses followed the traditional Baron and Kenney (1986) method, by calculating the effect of the effect of the independent variable on the mediator (X→M; the “a” pathway), the effect of the mediator on the dependent variable (M→Y; the “b” pathway), and finally the mediated effect of the independent variable on the dependent variable, controlling for the mediator (X→M→Y; the “c’’ pathway). The unmediated effect of the independent variable on the dependent variable (X→Y; the “c” pathway) is included in the table, although recent literature suggests that showing this effect is not unnecessary to show mediation. Sobel t-tests are provided to show where significant mediation is identified.

[TABLE 4 HERE]

Academic self-concept partially mediated the relationship between PAR and each of the three measures of student engagement. Peer academic reputation significantly predicted 21% of the fall-to-spring change in academic self-concept, suggesting that academic reputation with peers plays a substantial role in a student’s own self-conception. The strongest mediation was on the relationship between PAR and student-rated Striving, where almost half of the direct effect
could be explained by PAR’s relationship with changes in ASC. And although the effect of PAR on Affect was non-significant to begin with, a significant indirect effect emerged due to its relationship to changes in academic self-concept.

The effects of social self-concept were substantially weaker by comparison. Although peer social preference did significantly predict changes in social self-concept, social self-concept did not have a significant relationship to teacher-rated effort, and had small significant effects on Striving and Affect. The Sobel t-tests suggest that changes in social self-concept do partially mediate the small effects of PSP on Striving and Affect, however these effects are not as robust as those of academic self-concept and PAR. Thus while mediation effects are present for both, changes in academic self-concept is a much stronger mediator of the relationship between PAR and student engagement.

*Question #3: What developmental differences exist across grade levels on student engagement, self-concept and the longitudinal relationship between peer status and engagement?*

The final set of analyses addresses the developmental differences between children in first, third and fifth grades on measures of peer reputation, student engagement, and on the relationship between the two. Hypotheses were that younger students would rate highest on self-ratings of engagement and effort. Further, we expected that peers would play a larger role in determining student’s self-concept and enjoyment of school in the later grades. Thus we expected the effects of PAR and PSP on changes in engagement to vary significantly between children of different grades.

The results of grade-level comparisons are presented in Table 5. For mean-level comparisons, subscripts are included to indicate means that are significantly different from others. The mean level of teacher-rated effort did not vary significantly across classrooms – this
is consistent with the null effect for grade in the initial set of analyses (Table 3). It is likely that teachers set their expectations for effort based on the level they teach, thus this result is not surprising. Analysis of Variance (ANOVA) showed mean-level differences in both student measures of engagement – first graders were significantly higher on both Striving and Affect in both fall and spring than were third or fifth graders. Students in first grade also had a lower mean level of PAR, and a slightly higher overall level of PSP.

[TABLE 5 HERE]

Few significant differences were found when comparing differences in the slopes for the effects of PAR and PSP on changes in student engagement. No significant interactions between grade and peer reputation were found when predicting changes in Striving and Affect. Separately, both PAR and PSP had significant positive interactions at the first grade level; when taken together, significance dropped for PAR but remained for PSP. Children who have a higher peer social preference in first grade are more likely to see more growth in their teacher-rated effort during the school year. An increase of one standard deviation of peer social preference is associated with about a 5% increase in teacher-rated effort for first graders.

To further understand developmental differences, stabilities were calculated separately for each grade level for each of the three engagement outcomes and measures of self-concept. Table 6 provides the standardized stability coefficients for each of the 5 variables. OLS regression equations were run, regressing the fall variable as well as gender and site (PA or IL) onto the spring outcome.

[TABLE 6 HERE]
Within-year stability of teacher-rated effort was high and similar across all three grade levels, suggesting that teachers typically report similar effort from fall to spring. However, student-report measures showed larger differences between first, third and fifth grades, with the highest stability noted in fifth graders for all measures. Engagement measures Striving and Affect show a general trend toward greater stability in older children; the exception is that stability for Striving is slightly lower in third than in first graders. Both academic and social self-concept becomes progressively more stable across the three grades.
Discussion

This study sought to describe the role that peer academic and social status play in the development of elementary student's school engagement. The questions addressed in this paper are threefold, each testing a different aspect of a model of change. Our three questions were: (1) Do both academic and peer social reputations predict within-year change to student engagement?; (2) Do changes in academic and social self-concept mediate the longitudinal relationship between peer reputations and engagement?; and (3) What developmental differences exist across grade levels on student engagement, self-concept and the longitudinal relationship between peer status and engagement? Several significant findings emerged that replicate and extend the literature about peer status and school engagement. Our findings are discussed here in the context of developmental theories and the practical significance of our model for educators.

Effects of Status on Engagement and Self-Concept

A focus of this study was the role of peer reputation and status in predicting changes in children's engagement and self-concept. Developmental literature has noted that a sense of competence and a sense of relatedness are both critical components in the development of motivated and engaged behavior (Ryan & Deci, 2000; Skinner et.al., 2008; Weiner, 1985). The feedback that children receive from their environment shapes their own self-conceptions and influences future behavior. Peer feedback becomes especially relevant in the school context. Based on these theories, we expected to find that academic and social reputation would influence engagement through their relationship to changing competence and relatedness in the classroom.

Academic reputation was the strongest predictor in the growth of teacher-rated effort across the school year, despite effort having high within-year stability. Peer academic reputation also significantly predicted changes in academic self-concept; in turn, this relationship partially
mediated PAR's prediction of engagement. Previous studies have similarly shown the predictive utility of peer academic reputation (Gest et.al., 2008; Chen et.al. 2010). We believe that this reflects an active feedback process whereby peer opinions about academic ability reinforce academic self-concept and encourage or discourage further engagement.

The effect of PAR on changes to student-rated engagement was also evident, primarily through its association with academic self-concept. In the initial models, effects of PAR on Striving and Affect were generally weak, and became non-significant when paired with peer social preference. However, mediation analyses found that changes to academic self-concept were strongly related to changes in these engagement outcomes. Substantial indirect effects were found, and thus PAR held some indirect influence on student's enjoyment and connection to school.

The effects of peer academic reputation on engagement likely reflect a combination of peer's knowledge of student ability and differential treatment based on reputation. Although we chose not to explore bidirectional effects (with effort and self-concept predicting changes in PAR), Gest, Rulison and Davidson (2008) did so and found that these bidirectional effects do exist. The strong, consistent effects of PAR on changing academic self-concept and its relationship to effort indicates that children's engagement changes partly due to the feedback they receive from peers about their ability. Observational research further supports this idea - children do receive differential treatment based on reputation (Sage and Kindermann, 1999; Cohen, 1994). Thus our findings suggest that peer academic reputation does hold some influence over a student's general sense of competence, and subsequently their desire to engage or disengage from the academic context.
Developmental theories also suggest that a sense of relatedness to the social context is essential to the development of motivated and engaged behavior - findings about the role of social preference partially support this hypothesis. The largest effects of peer social preference were on changes to student-reported measures of engagement, indicating that general acceptance by peers significantly contributes to internal motivation and feelings of bonding with the classroom context. Peer social preference does not predict changes in teacher-rated effort after accounting for the effects of PAR; this may be due to the fact that effort is both more stable and considers mostly academic rather than social engagement.

Social preference was a significant predictor of changes to social self-concept, and there was some limited support for the idea that self-concept mediated its relationship with engagement. Mediation analyses further showed that social self-concept served as a partial mediator between peer social preference and changes in Striving and Affect. The relationship to social self-concept was expected and provides further support to work showing the same (Dodge, Coie & Coppotelli, 1982; Boivin & Begin, 1989). This finding aligns with other research showing that a sense of relatedness to peers has potential positive outcomes for engagement and performance.

Taken together our findings suggest that both academic and social reputations play an important role in engagement outcomes. The multi-dimensional nature of school engagement described by Fredricks, Blumenfeld and Paris (2004) indicates that different aspects of engagement are likely to be influenced by peer processes. Striving and Affect represent a general connection to and enjoyment of both academics and to the classroom social context. Thus our finding that PAR and PSP contribute uniquely to different aspects of the motivation and engagement process makes sense in the context of Self-Determination Theory and Skinner’s
model of engagement, which suggest that a sense of competence and relatedness are both necessary for self-driven and engaged student behavior (Ryan & Deci, 2000; Skinner et.al., 2008). Furthermore, our findings support models and research which suggest that social interactions with peers influence the development and maintenance of internal self-conceptions of academic and social ability (Harter, 1982; Molloy, Gest & Rulison, 2010; Catalano et.al., 2009).

Developmental Differences

Theoretical and empirical work has documented significant developmental changes in student self-concept, motivation and engagement behavior. Young children typically have inflated self-conceptions of ability and generally like school more than older children. During middle elementary school a gradual decline of intrinsic value and motivation for school begins and continues into the middle school years. Developmental theories suggest that students assimilate experience and feedback into their self-conceptions of ability and gradually develop a more realistic profile of their skills (Jacobs et.al., 2002; Dweck., 2002; Eccles et.al., 1993). The sample for this study included children from early, middle and late elementary school classrooms and provided an opportunity to explore some of these developmental differences in engagement and self-concept.

Our initial models exploring the effects of PAR and PSP identified a number of significant negative grade effects, indicating that younger children were indeed distinct. The mean value of student-reported engagement was significantly higher for first graders than for third or fifth graders. Social preference was also generally higher in first grade. Interestingly, the mean level of peer academic reputation was lowest in first grade, and differed significantly from the other two groups. Peer academic reputation has rarely been studied in children so young, and
this finding may reflect that academic reputation has a different meaning for children in first grade. Indeed, as many have shown, younger children tend to focus more on social characteristics than academic ability when making judgments about peers (Stipeck & Tannatt, 1984; Dweck, 2002).

Interactions between grade and social preference were mostly non-significant, going against our expectations. We believed that PAR would become more predictive of changes in self-concept at older age groups as the process of social comparison and peer feedback became more salient. The lone significant finding among the interactions was the effect of social preference on teacher-rated effort during first grade. This could suggest that being well-liked by peers provides encouragement and makes younger children want to be engaged with the classroom. It may also reflect a difference in the meaning of ‘effort’ in first grade classrooms. For instance, first grade teachers may focus more on student behavioral engagement and active participation in group activities rather than completion of assignments when considering effort.

A few possible explanations exist for the lack of significance in our interaction effects. First, self-concept and student-reported engagement becomes progressively more stable later in elementary school. Despite there being less variance to explain, the influence of peer social preference remained a significant predictor of change in both self-concept and engagement. Thus the sustained influence of peer status in the context of more stability likely reflects the increased importance of peer feedback. Second, studies have identified middle school as a time when socialization and social comparisons to peers begin to have the largest impact on engagement and achievement (Wentzel and Caldwell, 1997). Our study does not extend into middle school years, and so the largest grade-level interactions may have yet to emerge.
Ultimately our findings on grade-level differences support developmental hypotheses about changes in self-concept and peer influence during elementary school. A gradual decline is evident across the three grades in self-reported engagement and self-concept, and these self-evaluations become increasingly more stable.

**Strengths and Limitations**

This study has several strengths that contribute to the growing literature on peer reputation processes and student engagement. Measurement in this study uses multiple informants – peers, students and teachers – to document changes in student engagement. Additionally we use multiple measures of peer reputation, student self-concept and engagement. The sample for this study, 1523 students across 96 elementary classrooms, is also a major strength. Many previous explorations using sociometric measures of peer status have been limited to a handful of classrooms or schools. The sample also includes cohorts from early, middle and late elementary school, allowing for enough power to make grade-level comparisons of changes in self-concept and engagement.

The study has a few limitations as well. First, based on the nested nature of the data, using a Multi-level Modeling (MLM) approach would have been preferred to OLS regression in order to estimate a proper error structure. Second, based on having only two time points, our mediation analyses required the use of concurrent measures. Both self-concept and engagement outcomes represented change from fall to spring, and therefore it is impossible to speculate if one caused the other. A future version of these analyses will likely use three waves of data and allow for a more traditional approach to testing mediation. Third, controls for this study were limited to sex and grade level, but many other general factors may take up the variance explained by peer academic and social status on changes in engagement and self-concept. Without access to
complete data on ethnicity, SES or parent's education the decision was made to exclude those from the present analyses. Fourth, although the measures of student academic and social self-concept have been used widely across multiple studies, the internal consistency of these measures remains relatively modest, particularly for children in younger grades; this may hide additional grade-level differences and interactions. Finally, the design of this study did not allow us to fully explore whether socialization or social comparison processes were active in how students made self-evaluations. This precluded us from understanding the exact mechanisms that made peer reputations predictive of change in self-concept.

**Practical Implications and Future Directions**

Our findings about the effects of peer reputation may be used to inform teaching practices as well. By understanding how peer reputation may influence changes in student self-concept, motivation and engagement, teachers might serve as a moderator for these relationships. For instance, by providing students with a public opportunity to experience success and engage in front of peers, perceived competence by peers may improve. Additionally, encouraging students to use one another as resources for solving problems may give students with poor self-concept the opportunity to build both competence and relatedness in the classroom.

Elizabeth Cohen’s work focuses on ways that teachers can structure the classroom and groups of students to encourage and engage low-status peers. Her studies have shown that high-status students tend to talk more frequently during small and large group activities, contributing to their peers perception of competence. This work suggests that teachers who recognize status differences in their students can use strategic group-work to influence the expectations that students have about themselves and their peers. For instance, by providing low-status students the opportunity to be an ‘expert’ on a subject in group work, they and their peers may come to
recognize them as a more able contributor (Cohen, 1994; Cohen & Lotan, 1995; 1997). Many of these strategies have been tested in small-scale experiments and have shown some potential for improving self-concept among students low in status. Interventions and teacher professional development should be targeted toward helping teachers moderate the negative influence of poor peer academic and social status. Other authors have also written about methods and interventions to change teaching practice and encourage low-status children and low-achieving children to become more engaged and accepted by peers (Coie & Krehbiel, 1984; Hawkins et.al., 1988). Thus the development and testing of interventions that focus on changing peer academic and social status represent some practical use for the findings of this study.

Questions remain that should be addressed by future research. First, this study relied on student and teacher report measures, but the actual process of how peer academic and social status affects daily classroom experience is not well understood. Future studies might combine the peer nomination protocols with observational data to better understand the different experiences of children with high and low status. Second, a number of classifications of peer social status exist beyond social preference. Testing the influence of peer academic reputation on the academic self-concept of children who are classified as popular, rejected or controversial might be another goal for future research. Finally, perceived autonomy has been noted as a third element necessary for the development of motivated and engaged behavior. Future analyses should include autonomy support and perceived autonomy as a predictor of longitudinal change in self-concept and engagement.
References


Guay, F., Boivin, M., & Hodges, E. V. (1999). Predicting change in academic achievement: A
model of peer experiences and self-system processes. *Journal of Educational Psychology, 91*(1), 105.


Stipek, D. J., & Tannatt, L. M. (1984). Children's judgments of their own and their peers'
academic competence. *Journal of Educational Psychology, 76*(1), 75.


Table 1

*Descriptive Statistics for Fall and Spring Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>S.D.</th>
<th>Min</th>
<th>Max</th>
<th>Skew</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer Academic Reputation (Fall)</td>
<td>0.18</td>
<td>0.37</td>
<td>-0.90</td>
<td>1.00</td>
<td>-0.21</td>
</tr>
<tr>
<td>Peer Social Preference (Fall)</td>
<td>0.00</td>
<td>1.00</td>
<td>-3.05</td>
<td>3.30</td>
<td>-0.18</td>
</tr>
<tr>
<td>Academic Self-concept (Fall)</td>
<td>3.21</td>
<td>0.72</td>
<td>1.00</td>
<td>4.00</td>
<td>-0.81</td>
</tr>
<tr>
<td>Academic Self-concept (Spring)</td>
<td>3.19</td>
<td>0.72</td>
<td>1.00</td>
<td>4.00</td>
<td>-0.72</td>
</tr>
<tr>
<td>Social Self-concept (Fall)</td>
<td>3.05</td>
<td>0.85</td>
<td>1.00</td>
<td>4.00</td>
<td>-0.72</td>
</tr>
<tr>
<td>Social Self-concept (Spring)</td>
<td>3.10</td>
<td>0.86</td>
<td>1.00</td>
<td>4.00</td>
<td>-0.82</td>
</tr>
<tr>
<td>Teacher-rated Effort (Fall)</td>
<td>3.94</td>
<td>0.92</td>
<td>1.00</td>
<td>5.00</td>
<td>-0.59</td>
</tr>
<tr>
<td>Teacher-rated Effort (Spring)</td>
<td>3.90</td>
<td>0.95</td>
<td>1.00</td>
<td>5.00</td>
<td>-0.58</td>
</tr>
<tr>
<td>Striving (Fall)</td>
<td>4.17</td>
<td>0.68</td>
<td>1.00</td>
<td>5.00</td>
<td>-1.19</td>
</tr>
<tr>
<td>Striving (Spring)</td>
<td>4.13</td>
<td>0.68</td>
<td>1.00</td>
<td>5.00</td>
<td>-1.18</td>
</tr>
<tr>
<td>Affect (Fall)</td>
<td>3.72</td>
<td>1.01</td>
<td>1.00</td>
<td>5.00</td>
<td>-0.62</td>
</tr>
<tr>
<td>Affect (Spring)</td>
<td>3.60</td>
<td>1.05</td>
<td>1.00</td>
<td>5.00</td>
<td>-0.48</td>
</tr>
</tbody>
</table>

*Notes: All variables listed on original scales; Striving exponentiated for analyses.*
Table 2

Correlations Between Measures of Peer Reputation, Self-concept, and Engagement

<table>
<thead>
<tr>
<th>Fall Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Peer Academic Reputation (PAR)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Peer Social Preference</td>
<td>1.66</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Academic Self-Concept</td>
<td>0.33</td>
<td>0.22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Social Self-Concept</td>
<td>0.15</td>
<td>0.28</td>
<td>0.22</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Teacher-rated effort</td>
<td>0.62</td>
<td>0.46</td>
<td>0.24</td>
<td>0.07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Striving (exp.)</td>
<td>0.14</td>
<td>0.13</td>
<td>0.33</td>
<td>0.15</td>
<td>0.18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Affect</td>
<td>0.11</td>
<td>0.12</td>
<td>0.26</td>
<td>0.06*</td>
<td>0.16</td>
<td>0.64</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Spring Variables</th>
<th></th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Academic Self-Concept</td>
<td>0.34</td>
<td>0.23</td>
<td>0.52</td>
<td>0.22</td>
<td>0.25</td>
<td>0.22</td>
</tr>
<tr>
<td>9. Social Self-Concept</td>
<td>0.15</td>
<td>0.28</td>
<td>0.18</td>
<td>0.57</td>
<td>0.07</td>
<td>0.10</td>
</tr>
<tr>
<td>10. Teacher-rated effort</td>
<td>0.58</td>
<td>0.42</td>
<td>0.24</td>
<td>0.08</td>
<td>0.80</td>
<td>0.15</td>
</tr>
<tr>
<td>11. Striving (exp.)</td>
<td>0.14</td>
<td>0.16</td>
<td>0.30</td>
<td>0.13</td>
<td>0.15</td>
<td>0.50</td>
</tr>
<tr>
<td>12. Affect</td>
<td>0.10</td>
<td>0.14</td>
<td>0.24</td>
<td>0.05+</td>
<td>0.14</td>
<td>0.45</td>
</tr>
</tbody>
</table>

Notes: Striving variables are exponentiated as previously noted; All correlations are significant at the p < .01 level except where noted; * p < .05, + p < .10.
Table 3

Effects of Peer Reputation on Fall-to-Spring Change in Engagement

<table>
<thead>
<tr>
<th>Fall, independent variables</th>
<th>Teacher-rated Effort</th>
<th>Spring, dependent variables</th>
<th>Affect</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Step 1</td>
<td>Step 2a</td>
<td>Step 2b</td>
</tr>
<tr>
<td>1. Stability (fall)</td>
<td>.79**</td>
<td>.70**</td>
<td>.69**</td>
</tr>
<tr>
<td>Sex</td>
<td>.04*</td>
<td>.03+</td>
<td>.02</td>
</tr>
<tr>
<td>Grade</td>
<td>.00</td>
<td>-.02</td>
<td>-.01</td>
</tr>
<tr>
<td>2. Peer Academic Reputation (PAR)</td>
<td>.15**</td>
<td>.14**</td>
<td>.14**</td>
</tr>
<tr>
<td>Peer Social Preference (PSP)</td>
<td>.07**</td>
<td>.01</td>
<td>.02</td>
</tr>
<tr>
<td>3. Grade X PAR</td>
<td>-.01</td>
<td>.04</td>
<td>.03</td>
</tr>
<tr>
<td>Grade X PSP</td>
<td>-.05*</td>
<td>.00</td>
<td>-.03</td>
</tr>
</tbody>
</table>

Notes: All betas are standardized. Results represent a stepwise entry with controls for fall to spring stability, sex and grade at step 1; PAR and PSP as separate predictors at step 2a, then together in step 2b; and interactions with grade entered at step 3. Grade is centered at third grade for all models; *p<.05, **p<.01.
### Table 4

**Changes in Self-concept as a Mediator between Peer Status and Engagement**

<table>
<thead>
<tr>
<th>Peer Academic Reputation (PAR) mediation by Academic Self-Concept (ASC)</th>
<th>Spring, dependent variables</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Teacher-rated effort</td>
<td>Striving (Exp.)</td>
</tr>
<tr>
<td>a. PAR → Δ ASC (a)</td>
<td>0.21**</td>
<td>0.21**</td>
</tr>
<tr>
<td>b. Δ ASC → Δ DV (b)</td>
<td>0.07**</td>
<td>0.21**</td>
</tr>
<tr>
<td>c. PAR → Δ DV (c')</td>
<td>0.14**</td>
<td>0.05*</td>
</tr>
<tr>
<td>(0.15)</td>
<td>(0.09)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>Sobel t-test for mediation</td>
<td>3.42*</td>
<td>5.88**</td>
</tr>
<tr>
<td>Indirect effects of PAR</td>
<td>0.02</td>
<td>0.04</td>
</tr>
</tbody>
</table>

| Peer Social Preference (PSP) mediation by Social Self-Concept (SSC) |  |
|---|---|---|
| a. PSP → Δ SSC | 0.15** | 0.15** | 0.15** |
| b. Δ SSC → Δ DV | 0.01 | 0.10** | 0.05* |
| c. PSP → Δ DV | 0.07** | 0.07** | 0.06* |
| (0.08) | (0.06) |  |
| Sobel t-test for mediation | n.s. | 2.34* | 2.27* |
| Indirect Effect of PSP | n.s. | 0.02 | 0.008 |

*Notes: Betas are standardized. All models include controls for gender and grade effects. Unmediated effects of the IV on the DV are noted in parentheses below the mediated effect. *p<.05; **p<.001*
Table 5  

*Grade-level Means and Interactions*

<table>
<thead>
<tr>
<th></th>
<th>Means by Grade</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PAR (fall)</td>
<td>PSP (fall)</td>
<td>Striving (spring)</td>
</tr>
<tr>
<td>Grade 1</td>
<td>0.13&lt;sub&gt;a&lt;/sub&gt;</td>
<td>0.10&lt;sub&gt;a&lt;/sub&gt;</td>
<td>4.30&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
<tr>
<td>Grade 3</td>
<td>0.18&lt;sub&gt;b&lt;/sub&gt;</td>
<td>-0.13&lt;sub&gt;b&lt;/sub&gt;</td>
<td>4.03&lt;sub&gt;b&lt;/sub&gt;</td>
</tr>
<tr>
<td>Grade 5</td>
<td>0.21&lt;sub&gt;b&lt;/sub&gt;</td>
<td>0.00&lt;sub&gt;ab&lt;/sub&gt;</td>
<td>4.04&lt;sub&gt;b&lt;/sub&gt;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade-level Interactions</th>
<th>Teacher-rated Effort</th>
<th>Striving (exp.)</th>
<th>Affect</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1 X PAR</td>
<td>.01</td>
<td>.03</td>
<td>.01</td>
</tr>
<tr>
<td>G5 X PAR</td>
<td>.01</td>
<td>.03</td>
<td>.01</td>
</tr>
<tr>
<td>G1 X PSP</td>
<td>.06*</td>
<td>.01</td>
<td>.00</td>
</tr>
<tr>
<td>G5 X PSP</td>
<td>.01</td>
<td>.03</td>
<td>-.01</td>
</tr>
</tbody>
</table>

Notes: Subscripts are provided to show where means are significantly different (p<.05); * p<.05.
Table 6

*Fall-to-Spring Stability of Engagement and Self-Concept by Grade*

<table>
<thead>
<tr>
<th></th>
<th>Grade 1</th>
<th>Grade 3</th>
<th>Grade 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher-rated Effort</td>
<td>.76</td>
<td>.79</td>
<td>.80</td>
</tr>
<tr>
<td>Striving</td>
<td>.44</td>
<td>.38</td>
<td>.57</td>
</tr>
<tr>
<td>Affect</td>
<td>.55</td>
<td>.62</td>
<td>.69</td>
</tr>
<tr>
<td>Academic Self-Concept</td>
<td>.37</td>
<td>.49</td>
<td>.61</td>
</tr>
<tr>
<td>Social Self-Concept</td>
<td>.44</td>
<td>.50</td>
<td>.72</td>
</tr>
</tbody>
</table>

*Notes: All coefficients represent standardized estimate of stability, controlling for gender and location (PA or IL).*