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Peer Context Influences on School Motivation: A Naturalistic Observation of Peer and Teacher Contingencies Following On-and Off-Task Behavior in a Fifth Grade Classroom

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ABSTRACT

An abstract of the thesis of Nicole Ann Sage for the Master in Science in Psychology presented November 3, 1997.

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With regard to school motivation and performance, two questions have been central for both educational and developmental psychologists; Why do some students do well in school whereas others do not and why is it that over time, those students who do well, continue to do well, while those who don't, often get worse? Findings with regard to the first question are conclusive; many factors are associated with doing well in school. With regard to the second question however, the findings are less conclusive.

Parents, teachers and peers have been regarded as contexts in which socialization occurs. However, much of the research has focused on parents and teachers and little (research) attention has been given to peer influence. With regard to peer contexts, the magnitude of socialization and specific mechanisms of influence have yet to be specified. Although researchers often claim that peer socialization has occurred, claims have been made with correlational evidence of change across time. Hence, third variable explanations are possible. Additionally, there has been little

(direct) examination of specific mechanisms of influence.

The goal of this study was to (directly) examine **one** specific mechanism of influence called social affirmation. Sequential observations were conducted in a fifth grade classroom (N=25) in order to identify the contingency patterns from classmates and the teacher, that children experienced as consequences for their on-and off-task behavior. Twenty-two students participated in individual interviews on peer networks and filled out a questionnaire on school motivation. The teacher filled out a parallel questionnaire regarding each students' motivational level. Lastly, classroom interactions were observed across 10 days by observers blind to the classroom's peer context structures and the students' school motivation. Analyses examined the contingencies with which peer network members, non-network members, and the teacher responded to target students' on- and off-task behaviors. Results showed differences between the social partners' contingency patterns, and relations between students' own school motivation and the contingencies that they experienced from peer group members and non-members. These contingency patterns constitute learning conditions that can be viewed as a mechanism through which a child's peer group members can have an influence on that child's school motivation.

PEER CONTEXT INFLUENCES ON SCHOOL MOTIVATION: A NATURALISTIC OBSERVATION OF PEER AND TEACHER CONTINGENCIES FOLLOWING ON- AND OFF-TASK BEHAVIOR IN A FIFTH GRADE CLASSROOM

by
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Research on school motivation and achievement has centered on two main questions: First, why do some students do well in school whereas others do not? Second, why is it that those students who do well, continue to do well, while those who don't, often continue to get worse? In order to answer the first question, both educational and psychological researchers have examined the many possible factors that contribute to a child's success or failure in school. Prime targets have been characteristics of the child such as the child's self-perceptions, feelings of control, and intrinsic motivational tendencies and characteristics of the child's environment such as teaching strategies, parental discipline patterns, the classroom setting and class content, as well as the child's peer affiliations and relationships in school.

In order to answer the second question, researchers are often interested in the child's social contexts and the socialization influences within these contexts. Contexts which have been accorded a key role in the child's academic development are family, teachers, and peers. Socialization from both family and teachers has been a prime target of emperical research and socialization from peers has been a central construct for psychological theorizing for many years. Only recently has socialization from peers received a (much deserved) increase in research attention.

Widely noted is the importance of peer acceptance. Being liked by one's peers has a significant role in both social and academic adjustment. In addition, peers appear to have a substantial effect in fostering academic achievement motivation as well as influencing academic failure and school dropout.

Despite the growing literature on peer influences, there is still much to learn about the role of peers as socialization agents. For example, researchers currently claim (and report) that socialization influences occur within the peer context. However, support for this claim has been "borrowed" from studies of experimentally assigned groups and in developmental psychology has been largely based on correlational analyses of change across time. Hence, third variable explanations remain possible. In addition, the definition of "peer context" differs across the studies; often, the peer context includes only the individual's first three, self-nominated, reciprocal friends.

The goal of this study is to further examine the socialization role peers have on academic achievement motivation, focusing on the role of natural peer groups. Rather than examining socialization influences based on correlational analyses of the outcomes of peer influence (as most studies have done), interaction patterns among members in the individual's context will be examined. Thus socialization mechanisms will be directly investigated. Additionally, peer influence will be examined in a broader peer context, including the child's entire social network of

peers within the classroom. These peers, and not just children's closest friends, are childrens' most frequent interaction partners in the classroom.

The following literature review will open with a brief discussion of a theoretical model of motivation. The child's basic needs in the learning environment will be described and ways the child's environment can fulfil these needs will be addressed. Next, the child's social contexts during the school years and the importance of peers in social development will be discussed. The third section will review the literature on peer influence and the mechanisms of influence that have been studied. The fourth section will review the specific peer contexts in which these mechanisms have been studied, followed by the fifth section which will continue this review, discussing the methods that have been and are currently used to identify specific peer contexts. Also, in the fifth section is a rationale for including the child's entire system of peer networks as socialization contexts and a discussion of the advantages of using natural peer groups as contexts for identifying the mechanisms of influence. The final section will discuss the strategies currently used for studying mechanisms of influence within natural peer groups and will present an avenue for directly examining (in natural peer networks) one specific mechanism, namely social affirmation.

A Theoretical Model of Motivation

The individual has a natural tendency to explore his or her environment and to assimilate, internalize and integrate information (Piaget, 1952). The individual also strives for cohesion and integration between him or herself and others. These assumptions underlie Deci and Ryan's (1985) model of school motivation. Deci and Ryan assume that students enter the classroom with an innate desire to learn and to develop social relationships. These innate desires, in turn, result in basic needs for feelings of autonomy, competence, and relatedness. **Autonomy** refers to self-regulation of experiences, initiation, exploration, and actions. **Competence** is defined as the sense of accomplishment of a challenging activity at the border of the individual's ability and **relatedness** is the experience of connecting with others that promotes well-being.

When the child's social environment fulfills the needs for autonomy, competence and relatedness, children will be more likely to engage in classroom activities. Being engaged in class activities is the prime condition for doing well in school. Those children who do well in school tend to be highly engaged whereas those who don't tend to be disaffected. **Engaged** children are active, are likely to take on tasks at the border of their abilities, and generally display positive emotions during interactions. **Disaffected** children, on the other hand, are passive, give up easily, and generally have negative emotions during interactions (Skinner & Belmont, 1993).

Ryan and Powelson (1991) provide a detailed description of what the child's contexts should provide in order to promote engagement. They suggest that autonomy support and relatedness are fundamental for optimizing learning processes and engagement in class activities. Those children who experience autonomy support and feel connected to significant others are highly motivated and engaged in school. On the other hand, if contexts do not support autonomy, children will feel disconnected from significant others and will tend to be unmotivated and disaffected.

Who in the child's environment would be most important for nurturing these needs? Typically, parents and teachers have been regarded as the most important contexts for nurturing the basic needs that are necessary for maximizing academic engagement. Parenting style (Dornbusch, Ritter, Leiderman, Roberts, & Fraleigh, 1987; Steinberg, Dornbusch, & Brown, 1992) and teaching style (Boggiano & Katz, 1991; Brophy, 1986; Skinner & Belmont, 1993) are both associated with academic achievement, performance and engagement. With regard to parenting, both Dornbusch and colleagues and Steinberg and colleagues suggest that authoritarian and permissive parenting styles are negatively associated with the child's grades whereas an authoritative parenting style is positively associated with grades. Authoritative parents set clear standards, provide firm enforcement of rules, encourage the child's individuality, have positive affective relationships with their child, and recognize the child's rights as well as their own (Baumrind, 1971). All of these characteristics promote a sense of autonomy, competence, and relatedness.

Authoritarian parents however, are coercive and deny the child individuality and independence. Rather than encouraging independent behavior, authoritarian parents attempt to control and evaluate the child's behavior, denying autonomy support. As opposed to authoritarian parents, permissive parents allow their child too much self-regulation and give as little punishment as possible.

Similar to parenting style, teaching style may also promote or undermine academic engagement. In a review of teacher influences on student achievement, Brophy (1986) indicated that student achievement is highest when teachers emphasize class objectives, establish expectations, use effective teaching strategies to ensure that learning is maximized, plan courses that challenge the child but allow high rates of success, and adapt activities to suit the interests of each child. Congruent with authoritative parenting, these teaching strategies provide autonomy support, competence, and relatedness. Controlling teaching strategies, on the other hand, negatively affect children's achievement patterns (Boggiano & Katz, 1991). Comparable to authoritarian parenting, controlling teaching strategies deprive children of autonomy support.

Although effective parenting and teaching strategies may promote achievement, theorists J. M. Baldwin, L. S. Vygotski, and J. Piaget have also stressed the importance of peers for children's development (see also Hartup, 1983, 1993; Rubin, Bukowski, Parker, 1997). Although the importance of peers has been stressed, only recently have studies accumulated which indicate actual peer influence

processes. A recent investigation of parents and peers in fostering academic achievement suggest that both parent and peer support is important (Steinberg et al., 1992). It was found that an absence of peer support for academic achievement undermines the positive influences of authoritative parenting in African-American children. For Asian-American children, support from peers compensated for the negative consequences of authoritarian parenting. Individuals in every ethnic group performed better when academic support was received from both the family and their peers, as opposed to those who received support from only one source. Therefore it appears obvious to include the child's peers as a determinant for socialization of academic success.

The Child's Social Context During the School Years and the Importance of Peers

When children enter school, contact with other children increases. The proportion of social activities that occurs in interaction with peers (as opposed to other contacts) continues to increase throughout childhood. By age 11, 50% of the individual's social activity occurs within the context of peers (Hartup, 1983). By adolescence, time spent interacting with peers exceeds time spent interacting with the parent or any other socialization agent (Larson & Richards, 1991; Meldrich, Rosen, Rubin, & Buckley, 1982). Larson and Richards also found that when with family, affect becomes less positive, especially for children between fifth and seventh grade.

Positive affect during interactions with friends, however, increases during late childhood and early adolescence.

During the past two decades, the importance of peers in social development has increasingly been recognized. A prominent finding in the peer relationship literature is that friendships affect both development and adjustment (Berndt & Ladd, 1989). Another fundamental aspect of development and adjustment is peer acceptance. As illustrated by Ladd (1990), being liked by one's peers is associated with early school adjustment, and early adjustment problems may have lasting effects (see also Morison & Masten, 1991). In addition, Parker and Asher's (1987) review indicates that early peer rejection may lead to later life difficulties. Dropping out of school and criminality appear to be the clearest consequences of poor peer relations.

Asher (1983) suggests that there is a causal link between peer social status and behavior. Aggressive, withdrawn, and unsociable children are often rejected by their peers . On the other hand, children who exhibit high levels of social competence are often accepted by their peers (Gottman, Gonso, & Rasmussen, 1975; Newcomb, Bukowski, & Pattee, 1993). Reports from rejected children confirm that they are more lonely, less socially satisfied (Asher & Wheeler, 1985), and experience greater academic difficulties than children who are accepted by their peers (Green, Bosk, Forehand, & Beck, 1981).

Merely having friends is not the only predictor of positive development and adjustment. Quality of friendship is also important (Ladd, Kochenderfer, & Coleman, 1996). Ladd and colleagues developed a method that tapped into five friendship processes: validation, aid, disclosure of negative affect, exclusivity, and conflict. The perceptions children develop about their friendships were found to be associated with friendship satisfaction and stability. Children who perceived their friendships to have high levels of validation (i.e., offering help) and exclusivity (i.e., selective in their liking and association) and low levels of conflict, were more satisfied with their relationship and had a more stable friendship. These relational features of friendships yield emotional benefits that in turn affect how the child copes with the demands of school.

It appears that peers are important to positive social growth and that peer relationships provide unique and substantial contributions to the individual's development and adjustment, beyond that of other socialization agents (Hartup, 1983; Hartup & Sancilio, 1986).

Peer Influence

Although it has been illustrated that peers should be essential to one's social development and adjustment, there has been some debate on whether influences from peers are overall more positive or negative. For example, with regard to earlier studies, Bronnfenbrenner (1970) concluded that peers exert pressures that are in

opposition to the values presented by the adult society. Furthermore, Coleman (1961) contends that the pressure of peers is stronger toward social and athletic success in school than toward academic achievement. More recent studies on the negative influence from peers have found that peers may encourage antisocial behavior and aggressiveness (Cairns, Cairns, Neckerman, Gest, Gariépy, 1987), as well as influence academic failure and school drop out (Cairns, Cairns, & Neckerman, 1989; Hymel, Comfort, Schonert-Reichl, & McDougall, in press).

Fortunately, the negative views of peer influence have been challenged and many researchers acknowledge that peers have positive as well as negative influences. The direction of influence, however, depends on the characteristics of the peers with whom the individual associates (Berndt, 1989; Berndt & Keefe, 1992; 1995; Berndt, Laychak & Park, 1990; Cohen, 1977; Hartup, 1993; Kandel, 1978; Kindermann, 1993). The findings in this area of research are conclusive; attitudes and beliefs among associates converge over time. For example, Berndt and colleagues (1990) experimentally examined this phenomenon in an investigation of friends' influence on achievement motivation. Pairs of friends were randomly assigned to one of two groups. In the first group, the pair discussed situations that required them to decide between two actions, each representing a different level of achievement motivation. In the second group, the pair discussed a topic unrelated to school and motivation. Each participant independently made a decision on the situations, both before and after the discussions. Answers between friendship pairs

became more similar after they had discussed the situations with one another than before discussing them or not discussing them at all.

Berndt & Keefe (1995) proposed that adolescents are influenced by features of their friendships as well as by their friends' behaviors. Both pathways of influence were examined by asking each participant to report on his or her involvement and disruption in school during the Fall and again during the Spring. Self-reports of disruption in the Spring were highest for those individuals whose friends reported high levels of disruption in the Fall. In addition, positive features of friendships (i.e., intimate self-disclosure, prosocial behavior, and self-esteem support) resulted in an increase in self-reported involvement over the year.

Reciprocal Influences: Processes of Selection and Socialization

Many researchers of peer influence acknowledge that influence is bidirectional. Thus, both peers and the individual him or herself influence each other. This was illustrated in Kandel's (1978) study. Levels of similarity at two measurement points were examined with regard to four attributes: marijuana use, educational aspirations, political orientation, and delinquency. A questionnaire assessing these attributes was administered to students at the beginning and again at the end of the school year. Students were also asked to report their best friends in school at each measurement time. Of the 957 friendship pairs reported in the Fall, 668 were stable friendships (self report nominated at both time one and time two). Stable friendships yielded higher similarity scores at measurement point one than

those friendships that were not stable. In addition, the initial similarities among stable members increased over time.

Kandel (1978) suggests that the similarities between friends at each time period are a result of one or both of two processes: selection and socialization. Individuals tend to **select** and affiliate with others who are similar to themselves with regard to attitudes and beliefs(see also Tesser, Campbell & Smith, 1984; Cohen, 1977; & Hartup, 1993), personality and physical characteristics (Asher, Oden, & Gottman, 1977; Epstein, 1986), and/or behavioral patterns (Cairns, et al., 1987; Kindermann, 1993; Kindermann, McCollam, & Gibson, 1996). **Socialization** influences from individuals toward their groups, as well as from group members towards individuals, result in shifts in beliefs, attitudes, and behaviors. Often, the group as a whole becomes more homogenous over time (Cohen, 1977; Hartup, 1983; Kandel, 1978; Kindermann, 1993; Kindermann, et al., 1996). Kandel proposes that both selection and socialization processes work together, but that they also play different roles at various stages of relationships.

Kindermann's (1993) study on school motivation demonstrates how the processes of selection and socialization can work together. In the beginning of the school year and again at the end, fourth graders were measured on academic motivation and peer affiliations. Fall reports suggested that children chose to affiliate with peers who were similar in academic motivation to the children themselves. Over the school year, the overall motivational orientation of the children's peer

groups was preserved, despite considerable changes in group membership. Changes in group membership included the selection of new members and the elimination of old members. It is suggested that new members are added and old members are eliminated in ways that homogeneity of the groups' academic motivation is preserved (see also Kindermann 1996; Kindermann, et al., 1996).

Socialization influences from one's peer network were examined with regard to change in individuals' motivation across the year. Motivation profiles of childrens' peer groups in the beginning of the year significantly predicted changes in individuals' own motivation across the year. These results illustrate how the process of selection and socialization can work together. Individuals tend to affiliate with others who have similar motivational tendencies as themselves. Over time, new members are added to and some old members are eliminated from one's peer group, in a way that preserves the homogeneous composition of the group. At the same time, socialization processes from the peer group to the individual lead individuals to become more or less motivated, depending on the composition of their peer group(s).

Defining the Peer Group

There appear to be many kinds of peer contexts in which influence may occur. Hartup (1993) has identified three contexts in which peer influence has been studied: friendships, cliques, and crowds. Friendships are dyadic and are generally reciprocal (both friends nominate each other as a friend). Cliques, on the other hand,

are an aggregate of friends which can include best friends, close friends, and good friends, or perhaps even the friends of friends. Epstein (1986) takes the definition of cliques one step further and explains that cliques typically include 3-9 members. As opposed to cliques, Epstein explains that crowds are an association of about 30 members. Whereas Hartup merely identifies crowds as larger and looser aggregates than cliques, Dunphy (1963) describes crowds as collections of cliques and Brown (1989) describes crowds as looser aggregates, consisting of overlapping cliques that share certain norms.

Other forms of peer contexts in which peer influence has been found to occur and has been studied are referred to as friendship groups (self-reported) and naturally existing peer groups (peer networks). Studies of friendship groups are commonly based on children's self-reports, so Cairns, Leung, Buchananan, and Cairns (1995; see also Leung, 1996) use the term "**self-reported friendship groups**" to refer to groups of friends for these peer contexts. In Cairns and colleagues' research, about 3-4 friends are nominated to be in a group. Structurally speaking, friendship groups appear to rest between friendships and cliques.

Natural existing peer groups (also referred to as peer networks) are similar to friendship groups in that they may include some reciprocal friendship dyads; however, they differ in that not all members are reciprocal friends. Rather, peer networks are aggregates of individuals who are **known to hang out with one another** and spend time together (Cairns, Perrin, & Cairns, 1985; Kindermann,

1996). Structurally, this definition appears to be similar to the definition of cliques, as well as slightly overlapping with Brown's (1989) definition of a crowd. It should be noted that there is little theory in this area. Not much is known about how groups of dyads, cliques, and crowds are related or about their hierarchial organization. As Hartup (1993) explains, researchers currently do not have the models with which to represent individuals within these hierarchial structures.

At the current time, perhaps it is more important to focus on definitions of friendships, friendship groups and peer networks, because these terms are typically used to represent the different peer contexts with which peer influence is studied. With this focus in mind, definitional issues along with measurement issues will be discussed in the following sections.

Peer Group Identification Methods

In his 1996 paper, Kindermann describes the differences between children's social groups that are based on popularity (sociometrics), mutual friendship, social categories or peer networks. In sociometric research (popularity grouping) children are placed in groups based on peer acceptance. Whether the child is liked ("popular") or not liked ("rejected") determines group membership. These "groups" are really categories of children; interpersonal relationships are not necessary among "group" members. Social category grouping, on the other hand, requires grouping based on how the individual is perceived by his or her classmates. Whether the child

is perceived by classmates as a "brain", "nerd", "jock", etc., determines group membership. Friendship groups, in contrast, are usually derived from mutual friendship nominations (self-reports) and are based on general liking. Children are considered a member of a given child's group if both partners nominate each other as a friend. Peer network grouping, however, is entirely different. Children are placed in groups because they are known to spend time together (children do not give self-reports but are interviewed as expert observers in the classroom). Others in the setting can easily identify these affiliations by the selective attention and proximity seeking behavior displayed by the individuals within the group.

A child's peer network may consist of a variety of the child's friends (both reciprocated and non reciprocated; inside and outside of school). However, usually not all members of the network are the child's friends. Unfortunately, not much is known about the overlap between self-nominated friendship groups and peer networks. Only two studies have investigated this overlap and the findings differ between the two. With a sample of 132 fifth and seventh graders, Cairns, Leung, Buchanan, & Cairns (1995) found considerable overlap between self-nominated friendship groups and peer networks across two time periods in the middle of a school year (57% and 82%, respectively). At the beginning of the school year, McCollam and colleagues, (1995), however, reported only about 40% overlap with a sample of 366 sixth graders (see also Kindermann, 1996).

These investigations of overlap between self-nominated friendship groups and peer networks are relatively new and further specification of these results is needed. However, even if there is a large overlap, it would be clear that individuals spend time with members of their networks who would not be their friends (either as self-reported or as reciprocally nominated friends). These other network members may still exert socialization influences that alter the individual's beliefs and behaviors (see Kindermann, 1993 and Kindermann et al., 1996, for studies investigating socialization within peer group networks). Studies involving self-reported friendship groups generally do not include these members, therefore the individual's entire socialization network is not captured. When studying peer group influences within the realm of self-nominated groups, it is possible that important socialization agents are not included. This may mislead researchers when examining peer group influences.

While friendship nominations methods seem to miss those network members as potentially influential partners, other methods seem likely to include too many other classmates in an undifferentiated manner. Sociometric methods, which take the entire classroom as a reference group for a child's popularity, consider everyone of equal importance in terms of social influence. Social categorization methods, which differentiate between different categories of age mates, appear to also be too broadly based. This is because they are likely to include broad categories of "popular" or "nerd" groups, for example, which may represent quite distinct social groups

(Kindermann, McCollam, & Metzler, 1995). Above all, sociometric, self-nominated friendship groups and social category methods of group identification lack the many advantages that the method of peer network identification yields. If children are placed in groups because they are known to spend time together, there is a high likelihood that these are the most frequent interaction partners in the classroom.

It could be argued that social networks are problematic because they may not include all self-nominated friends. Although this is true and studies using the social network procedure has shown that peer networks do not include all self-nominated friendships (e.g., McCollam et. al, 1995), the standpoint of the current paper is that it is more important to include all frequent interacting partners than all self-nominated friends.

Peer Group Networks Versus Sociological Networks

It should be noted that social network analyses have a long history in the fields of Sociology and Anthropology (for reviews see Wellman & Berkowitz, 1988 and Wasserman & Galaskiewicz, 1994). However, studies in these fields have are usually based on self-reports. It can be assumed that the same problems apply that were indicated in the previous section on self-reported friendship groups.

Advantages of the Peer Network Identification Method

Compared to self-reports, the most important advantage of the peer network method is that not everyone in the setting must be an informant to obtain reliable reports, if there are no systematic selection biases. Sufficient information can be

obtained with reports from about 50% of the members in the setting (Cairns et al. 1985). This reduces the difficulties often encountered with other methods (i.e., reciprocal friendship nominations) when individuals are absent (or consent has not been obtained) and thus potential reciprocal nominations are missed. In addition, the amount of information obtained from each respondent is greater as opposed to information derived from other methods because respondents describe many groups, including, but not limited to their own.

Another advantage is that the group structures derived from the peer network identification are more comprehensive than group structures derived from self-reports. Cairns and colleagues (1995) found that the peer network identification procedure yielded larger and more inclusive groups than groups derived from self-reports. In addition, self-reported groups may be biased. Man-Chi Leung's (1996) study of Chinese children's social networks and self-enhancement suggests that the students tend to have a self-enhancing bias when reporting their groups, omitting those members who have a low scholastic rank and who have low (teacher reported) competence scores.

Studying Mechanisms of Peer Influences Within the Peer Network[1]

The study of peer influences within naturally existing peer groups is relatively new and reports are usually vague about the magnitude of possible influences. Often, selection processes are depicted as being at least as, if not more powerful than socialization processes. Nevertheless, group socialization effects have been shown to be quite powerful in social psychological research (e.g., Asch, 1955; Meyers & Bishop, 1970; Sherif, 1937; Sherif, Harvey, White, Hood, & Sherif, 1961). These effects have been found among many different experimental conditions and with regard to various target variables.

It appears to be the position of many developmental psychologists that strong socialization effects exist between randomly assigned groups of people who do not share established relationships. However, when natural affiliations are taken into account, the effects are much weaker. These effects can appear relatively small because people are studied who are often similar to begin with. Additionally, socialization effects within natural groups may appear small because social influences may possibly precede group formation (Kindermann & DeCourcey, in press).

Although there is the potential of underestimating peer influences within natural groups, there is also the potential for overestimation. It is possible that the

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[1] Discussions regarding socialization mechanisms also appear in Sage and Kindermann's (1997) paper recently submitted for publication.

group members were on similar developmental trajectories to begin with and may simply follow the same pathways regardless of group membership with one another. Overestimation may also occur because similarity among children is usually the outcome of selection and socialization forces from outside of the peer group. This is an obstacle for most correlational studies on peer influences.

The influence processes within natural groups can be difficult to demonstrate. One obstacle is the difficulty of disentangling influence processes from (on-going) selection processes. Another obstacle is that outcomes of peer influences rather than the processes are typically studied. Those studies that have attempted to examine the processes have merely documented change across time rather than examining the interaction patterns that occur between individuals, thus failing to identify the specific socialization processes (e.g., reinforcement, imitation, and identification) that occur between individuals and their environment.

For example, Kindermann (1993; see also Kindermann et al., 1996), examined peer group selection and socialization, by documenting the change in group composition and the change in individuals' school motivation (self-and teacher reports) across the school year (Fall to Spring). Because changes in motivational composition of children's peer groups could be predicted from children's own initial motivation scores, it was concluded that children themselves had some selection influences on the reorganization of their own groups' membership. Because the motivational profile of an individual child's peer group allowed predictions of this

individual's own change in motivation across the school year, it was concluded that socialization, a mechanism of peer influence, had also occurred.

Selection and socialization have been recognized as processes of peer influence, therefore it is possible that such correlational evidence could explain why those students who do well in school, continue to do well, whereas those who don't, continue to get worse. However, the finding that change across time was found to be related to peer groups and individuals does not necessarily mean that selection and socialization processes are really the cause. A specific mechanism of how influences occur was not examined; therefore, third variable explanations are possible. For example, it is possible that student-teacher interaction patterns differ between students who enter the classroom motivationally "rich" and students who enter the classroom motivationally "poor". Skinner and Belmont (1993) provide evidence for this; therefore, individual and group changes could be due to differential teacher treatment. The key question for peer selection and socialization processes is whether specific **mechanisms of influence** could be shown in natural interactions among peer group members and whether these would differ from interactions with teachers and non-peer group members.

One avenue of a study that aimed at directly examining the socialization process among peers would be to identify interaction patterns in the classroom that could be understood as one possible mechanism that influences development. B. F. Skinner's learning theory can provide one such mechanism, so that the natural

contingencies that children experience in their everyday interactions for their behaviors could be such a mechanism. A target variable of interest could be social affirmation by teachers and classmates. From a learning perspective, it is presumed that contingencies following the individual's behavior could result in either increases or maintenance of the behavior or a decrease in the specific antecedent behavior. Thus, it could be expected that **social affirmation** (i.e., approval) by one's classmates (and teacher) will encourage the preceding behavior; disapproval, on the other hand, will likely decrease the occurrence of that behavior.

Within the setting of the classroom, academically related behaviors are generally of most interest. Among those, on-task and off-task behaviors during regular classroom lessons may be behaviors that are openly observable by observers, as well as teachers and classmates. In addition, these behaviors seem to be closely related to the variables engagement and disaffection (see Wellborn, 1991). Finally, we can take Kindermann's (1993) suggestion that correlational evidence seems to exist for peer selection and socialization processes with regard to behavioral (but likely not emotional) engagement as an indication that selection and socialization processes may target these kinds of behaviors.

Summary

Traditional research on school motivation has focussed primarily on parents and teachers as the key agents in the socialization process. However, the important role of peers in social development has increasingly been recognized. Peers appear to provide substantial and unique contributions to the individual's development, perhaps beyond those of other socialization agents. The relational features of friendships yield emotional benefits that affect how the child copes with the demands of school. For instance, having friends and being liked by one's peers is fundamental to social as well as academic adjustment.

The influence of peers has also been investigated, and both positive and negative socialization influences have been documented. The direction of influence however, appears to be dependent upon the characteristics of the peers with whom the individual associates. Individuals tend to select and affiliate with others who have similar attitudes, beliefs, and behaviors as themselves. Any change in group membership is coordinated so that new members are added and old members are eliminated, in a way that the homogeneity of the group is preserved. As a result of socialization influences, initial similarities among group members increase.

Based on these findings, it can be expected that highly motivated individuals will affiliate with others similar in motivation orientation (and vice versa). In turn, it is can be expected that socialization from highly motivated groups would proceed in a positive direction and socialization from highly disaffected groups would proceed

in a negative direction. Thus individuals who are motivationally "rich", get "richer" and those who are motivationally "poor", get "poorer".

Most of the studies in this area have focussed on outcomes of peer influence rather than the process itself, merely documenting changes in peer group similarities overtime. The analyses in these studies are typically correlational. In addition, peer influence has primarily been examined under controlled conditions between dyads (or small groups), despite evidence indicating that natural and larger peer contexts, namely natural peer networks, can exert socialization influences that affect the individual's development.

An Overview of the Study

The current study examined a specific mechanism of influence called **social affirmation** within naturally existing peer groups. Expectations for this mechanism to exist are based on learning theory, as well as on correlational evidence that individuals' change in engaged classroom behavior across the school year was predicted by the motivational composition of peer groups during an earlier part of the year.

Naturalistic observations were conducted to collect information on social interactions as they occurred naturally in the classroom. Contingencies from classmates and the teacher following the individual's on-task or off-task behavior were coded. A cognitive composite social map procedure was used to identify children's natural peer networks in the classroom. Self- and teacher reports of each individual student's behavioral and emotional engagement were used to assess school motivation.

The study investigated four major hypotheses, two regarding the composition of peer groups and two regarding socialization mechanisms of school motivation. With regard to group composition, it was expected, based on previous studies, that peer groups would be motivationally homogenous. Thus, students who are highly engaged would affiliate with others who were also highly engaged (and vice versa). In turn, it was expected that observation of on- and off-task behaviors would yield similar results, such that peer groups would be found to be behaviorally

homogeneous. Thus, those students who displayed high proportions of on-task behavior will affiliate with others who displayed similar levels of on-task behavior (and vice versa).

With regard to socialization mechanisms of school motivation, it was expected that peer group members would respond differently than non-peer group members (and the teacher) to the target individual's behavior. It was also expected that contingencies would differ between engaged individuals and disaffected individuals. These expectations were derived from findings in the peer group literature suggesting that members of a child's peer group(s) exert direct influences on the individual's development.[2]

Method

Participants

Observational, questionnaire, and interview data were collected one month after the beginning of the school year in a fifth grade classroom of a suburban elementary school. From a total of 25 students, 22 students (10 male and 12 female) and the male teacher agreed to participate.

Informed Consent. Initial contacts were made with the class teacher, the school principal and the school superintendent. All three approved the study and

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[2] Specific hypotheses regarding peer group compositions and mechanisms of peer influence are discussed in the method section

gave their support. One month before the study began, the investigator went to the class and talked to the students about the study. A description of the events of the project (i.e. interviews, questionnaires, and observations) was given as well as an assurance that participation (or lack thereof) would in no way affect the student's grades or status in school. An information letter, detailing the events of the study, was then given to the students to take home for their parents to review. Written consent from the class teacher was obtained at this time as well.

Two weeks prior to the beginning of the study, parent consent forms were given to the parents to fill out and return. The parents were asked to indicate whether or not they gave permission for their child to participate. Consent forms not returned prior to the beginning of study, were regarded as though the parents had not consented to their child's participation. Those students from whom parental consent was obtained were asked for their own written consent. All of these students agreed to participate (see Appendix A for an example of the parent information letter and consent form).

Non-Observational Measures and Design

Individual engagement. Student engagement was assessed by teacher reports of class engagement. The teacher filled out a 28-question report of his perceptions of each participating student on three scales: behavioral and emotional engagement, and motivational orientation (Wellborn, 1991; see Appendix B for the engagement questionnaire: teacher report). Behavioral engagement items tap the students' efforts,

persistence, and attention during classroom learning activities (e.g., *In my class, this child pays attention.*). Emotional engagement items assess emotional reactions during the classroom, such as happiness, interest, anxiety, and anger (e.g., *In my class, this student appears anxious.*) Questions pertaining to motivational orientation tap into the students' preference for challenge, independent mastery, judgment, and the student's flexibility in the classroom (e.g., *This student depends on me to make all decisions regarding his/her schoolwork.*)

The teacher was asked to rate each student on a 4-point scale from "Very characteristic of this child" to "Not at all characteristic of this child." In the original sample with which the scales were developed, Chronbach's alpha coefficient showed high internal consistencies for behavior, emotion, and orientation (α = .95, .75, .94, respectively; Wellborn & Connell, 1991). Ratings were found to be stable across the school year for a sample of 144 third through fifth grade students ($r = .73$, $p < .001$; Skinner & Belmont, 1993).

The participants filled out a parallel report with a total of 29 questions.[3] Thirteen of the questions asked about their motivation in school. These questions tap both the participants' behavioral and emotional engagement in school (e.g., *When I'm in class, I just act like I'm working.*) The behavioral/emotional engagement

[3] Self-reports of engagement were not used in the current study. Only teacher reported engagement was used.

scales show high internal constancy ($\alpha = .87$) and are relatively stable across the school year ($r=.72$, $p < .001$, $n = 144$; Skinner & Belmont, 1993)[4].

The students were asked to circle the answer that was most true for them, for each statement, on a scale from "Very true" to "Not true at all". Three additional questions were added that the researcher read out loud to the participants. These questions were regarded as practice items only and were not used in the analysis. The practice items are structured to ensure that the participants understood the scale. The first two questions, "I am in fifth grade" and " I am in third grade", were answered by everyone in the two extremes. The third question, "I like ice-cream", resulted in various answers on the scale. The researcher explained to the students that the remaining statements would be similar to the third statement; that there would be no right or wrong answer (see Appendix C for an example of the engagement questionnaire: Student Report).

The questionnaire was administered to the class as a whole. As suggested by the class teacher, those students for whom parental consent was not obtained also filled out the questionnaire; however, they were not asked to turn it in to the

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[4] In addition to behavioral and emotional engagement, scales measuring the students' relatedness to the teacher and friends were included. Eight questions were about the individual's relatedness to his/her friends and eight more were about relatedness to the teacher. These questions ask about the participants' emotional security and proximity seeking with the teacher and friends (e.g., *When I'm with my teacher, I feel like I belong; I wish my teacher/friends spent more time with me*). Note that these scales were not used in the analyses for this study.

researcher. This eliminated the need for the teacher to assign another task to nonparticipants and also eliminated any feelings of being left out for those not participating.

Peer group identification. Cairns and colleagues' (1985) interview method was employed to gather reports of "who hangs out with whom" in the classroom. This method is based on the assumption that a child's membership in peer networks can be observed with regard to time spent together with members and their physical proximity. Hence it was expected that others in the setting can reliably identify these groups because children's affiliations are public knowledge. Thus children were used as expert observers and the accounts of many child reporters should converge on the setting's natural structure.

At the teacher's convenience, participants were individually taken outside of the classroom into another room by the interviewer. The interviewer introduced him or herself, then briefly restated the events of the study, informing each participant that the study's focus was on how students got along together in school. After being given the opportunity to ask any questions, the participant was asked to fill out the student consent form.

The interview began with the inquiry: "*There are students in your class that hang out together all the time, is that right? They may be just working or just do a lot of things together. I would like you to think about the groups of students in your class who hang out together. Starting with any group, who hangs out together*"?

This procedure requires the informants to nominate, from free-recall (no lists or pictures), who they believe hangs out together in the classroom. Students were encouraged to name an unlimited number of groups (including at least two people) and were informed that they could nominate an individual as belonging to more than one group. Depending on the responses to the initial question, additional probes were used. For example, if the participant named only groups of boys, he or she was asked if there were any groups of girls. If individuals did not name themselves as being a part of a group, they were asked whether they had a group of their own. At the end, the participant was asked about people who did not hang out in a group, but preferred to be (or were) alone.

Once each list of nominations for each group was completed, the following open-ended questions pertaining to the group were asked: The group's name (if any), what activities the group did together, and also difficulty or ease of joining the particular group. Upon completion of the open ended questions about the peer groups, the participant was asked to report his or her three best friends in the classroom (see Appendix D for interview procedure; note that the friendship data were not used for the current study).

Observational Measures and Design

Description of the Observational Setting[5]. The study was conducted at Greenway Elementary School in Beaverton, Oregon. The classrooms at Greenway Elementary are considered open classrooms. Boundaries between the classes are defined by bookshelves, computer tables, and some midlength walls. Classroom lessons in the class where the study was conducted were of two types: **traditional lecture** format and a less structured **writing workshop**. In the traditional lecture format, students sat in desks assigned by the teacher. The desks were arranged in 6-8 "clusters" consisting of 4-5 desks. During the writing workshop, the students worked on projects either alone or with self selected groups. The projects required the students to gather information from the library directly outside of the classroom on a topic chosen by the student him or herself, write a report on the topic, and construct a cover for the report using paints, crayons etc.

The various class formats provided for observations to occur when the interaction frequencies, particularly among peers, were dense (writing workshop) and also when interactions were not as frequent (traditional lecture). Additionally, the various group arrangements (i.e., both assigned and self-selected) allowed for observation of children in interactions with various classmates in the classroom and

[5] Although no immediate advantage or disadvantage for the current study is apparent with the described setting, I thought the idiosyncrasies of the classroom style were worth noting.

not with just assigned or self-selected classmates. Approximately 50% of the observations were conducted during each classroom format.

Pilot Study. Prior to conducting the current study, a pilot study was conducted in the same class (note that the pilot study was done in the Spring of the same year as the current study; participants in the pilot were not the same ones who participated in the Fall). The students in the pilot study filled out the engagement questionnaire, participated in peer network interviews and were observed as they interacted with classmates and the teacher. Natural behavioral observations were recorded via paper pencil or headset microphones/cassette recorders. It should be noted that only **descriptions** of the behaviors were recorded at this time. These descriptions were later coded using an earlier version of the current observational system. Many of these behavioral descriptions were subsequently used as operational definitions (and/or behavioral examples) for the coder training of the final study. These descriptions were instrumental for revisions of the coding system.

The paper-pencil method of behavior recording was quickly dismissed as a method to be used for the current study. To use microphones and cassette recorders, however, appeared to be more suitable. The microphones were sensitive enough to allow verbal coding to occur without letting students in the classroom hear what was coded. The equipment allowed for a rapid and quite accurate account of the behavior occurring in the classroom as opposed to the paper-pencil method. Only the headset

allowed for many, sometimes simultaneously occurring, social partner responses to be captured with confidence.

In addition to the observations, classroom interactions were also videotaped during the pilot study. At times the students' behaviors were both videotaped and recorded using the headset microphone system at the same time. Other times only one recording method was used. Both transcripts and videotapes were used as training material when training the observers for the current study.

Observer Training. Training sessions occurred on a weekly basis for five months prior to the study. The goal of the training sessions was to not only teach the observers to code behaviors, but also to accurately describe the behaviors as they occurred. For example, the observers had to differentiate between giggling and laughing and use the appropriate verbal description. The training was conducted in seven steps. A consistent 90 % (or higher) agreement on coding was obtained before going to the next stage of training. The following steps were followed: (1) Training to code written transcripts of independent behaviors from the target and social partner (separately), (2) Training to code written transcripts of two line interactions, in which the target person displays a behavior and one social partner responds to this behavior, (3) Training to code written transcripts of actual interactions in a classroom (interactions transcribed from the pilot study were used), (4) Arrival of a standard for verbalizing classroom behavior (e.g., distinguishing when to say giggling versus laughing), (5) Training to verbally describe (and code) target student

behaviors from video tapes (video tapes of students from the pilot study were used), (6) Training to verbally describe (and code) interactions between the target and social partners, (7) Training to verbally describe (and code) interactions in a classroom (a Portland State University classroom was used).

Observational design. A total of five trained observers (kept blind to the hypotheses and peer network structures) participated during the **observation period** (15 days). It should be noted that observers began to sit in the classroom one week prior to the observations in order to acclimate both themselves and the students to their presence. During this time, the observers memorized the students' names.

On each day of the 15 day observational period, two observers were present (at the same time) for approximately two hours each. Following random lists of target students (different for each observer, each day), the observers observed and coded the target student's on-task and/or off-task behavior and any subsequent responses from social partners and the teacher. Target students were students in the classroom for whom informed consent (parents and students themselves) was obtained. They were observed at least once (and sometimes twice) for 3 minutes, by each observer, during each two hour observation session.

Beginning with the target student, the observers described the behaviors of the target and any contingent responses, by any social partner, as they occurred in their **natural sequence of events**. The target person as well as any responding social partner were identified by name. Each name was subsequently followed by a verbal

description of the behavior as well as by the respective coding category with which the behavior belongs (e.g., "Mary shows John her completed homework assignment; On-task active. John smiles and says she did a great job"; Approval). In situations where multiple social partners responded simultaneously to a target person's behavior (e.g., many children laughed at a joke) the target child's antecedent behavior was re-coded as an antecedent for every single social partners' response.

A target student's behavior was re-coded if it continued for longer than 10 seconds without any change and/or response from a social partner.[6] Also, responses from social partners were recorded only if they were in direct response to the target student's behavior (e.g., teacher lecturing was not recorded when the target student was listening).

Observational system (coding categories). The observational codes and definitions by Charlesworth and Hartup (1967), Horn, Conners, and Wells (1986), and Kerr, Aigmond, Schaffer and Brown (1986) were used as a basis for construction of the coding system for the proposed study. The coding system consists of 12 mutually exclusive and exhaustive categories, five of which are for coding the target person and the remaining seven for coding the social partner(s).

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[6] The coding design was a combination of event coding and interval coding with event coding taking precedence. Thus, each new event (by target or social partner) was coded as it occurred, however, when a behavior lasted longer than 10 seconds (a stop watch was used to count seconds after each behavioral occurrence) it was coded again. The most usual case was when the target student was reading most (if not all) of the 3-minute observation.

Coding categories for the target student include On-Task Active Behavior, On-Task Passive Behavior, Off-Task Active Behavior, Off-Task Passive Behavior, and Other. Definitions and behaviors for the target person's codes are as follows:

- **On-Task Active** is defined as making a class contribution. Behaviors include: (a) Asking/commenting on class related topics, (b) Initiating/participating in class related discussion (staying within class topic), (c) Working on blackboard, (d) Reading aloud, (e) Raising hand, (f) Smiling or laughing in response to on-task conversation, and (g) Showing on-task work to another person.
- **On-Task Passive** is defined as working and other nonverbal class related activities. Behaviors include: (a) Taking notes and/or reading class textbook or working on assigned class activity, (b) Looking at teacher (or person speaking and/or working on class related topic), (c) Working on computer, and (d) Talking or mumbling to self.
- **Off-Task Active** is defined as a disruption to class on-task activity. Behaviors include: (a) Interfering with others' on-task work, (b) Making remarks unrelated to class topic (e.g., jokes), and (c) Smiling or laughing in response to off-task conversation.
- **Off-Task Passive** is defined as working and other nonverbal not class related activities. Behaviors include: (a) Reading material or taking notes on material unrelated to class topic, (b) Looking away from teacher (or person

speaking on class related topic), and (c) Looking at peer speaking or working on something that is off-task.

- **Other** is used for all other behaviors that cannot be coded as on-task and off-task passive or active. An example is a student moving from one side of the classroom to another without giving any indication of working or interacting with students.

For the social partner(s), coding categories include Approval, Cooperation, Disapproval, Factual Disagreement, Ignoring, Prompt, and Leaving. Definitions and behaviors for social partners' codes are as follows:

- **Approval** is defined as a display of direct approval to target student's behavior (usually accompanied by emotion). Behaviors include: (a) Praising (e.g., "That's great") and (b) Laughing or smiling.
- **Cooperation** is defined as a display of indirect approval to target student's behavior. Behaviors include: (a) Following a request, (b) Picking up a topic and continuing, (c) Imitating (very obvious), and (d) Attending.
- **Disapproval** is defined as a display of direct disapproval to target student's behavior (strong emotion). Behaviors include: (a) Ridiculing, (b) Critiquing, and (c) Changing the topic.
- **Factual Disagreement** is defined as difference of opinion of target person (same topic, different ideas). Behaviors include: (a) Giving a fact/cooperative

correction (e.g., "You forgot the comma") and (b) Displaying skepticism of target student's ideas.

- **Ignoring** is defined as ignoring target student's specific/direct bid for attention (i.e., no apparent reaction).
- **Prompting** is defined as interrupting a student's on-task or off-task behavior. Possible behaviors include: (a) Bidding for attention that is directed at target (e.g., throwing hat at target).
- **Leaving** is defined as moving away from area where target person is (Note: Social partner must have previously interacted with target).

Inter-observer reliability. At the beginning and again at the end of **each observational session**, the two observers simultaneously recorded the same target student. Interobserver agreement was determined using Cohen's (1960) Kappa. Kappa is an agreement index that corrects for agreement that could occur by chance. Interobserver reliability was sufficient (kappa= .71; agreement percentages of the categories of interest ranged from 73% for off-task-active behavior, to a low of 50% for disapproval; note that all errors in the coding of disapproval were omissions by observers). Reliability ranged from one kappa score of zero (in a session in which observers agreed perfectly but coded only one behavior category), to two instances of perfect agreement (1.0). Reliability indices were obtained for 14 days (on two days, an observer had become ill and was not present in the classroom; on two other days, class periods ended early so that agreement was only checked at the beginning of

observations). There were no indications of changes in reliability over time or of systematic differences across observers.

Hypotheses

Hypotheses for the proposed study fall under one of two categories: **Group composition** and **socialization mechanisms of school motivation**. Group composition refers to the structure of the peer groups and the criteria around which the groups were organized. Socialization mechanisms refer to contingency patterns that were expected in target students' interactions with peers and the teacher.

Group Composition

Since many studies have found that individuals tend to select and affiliate with others who are similar to themselves in attitudes, beliefs and behaviors (e.g. Kandel, 1978; Kindermann, 1993; Kindermann et al., 1996), it was presumed for the current study that behavioral engagement could also be shown to be a criterion according to which peer groups are organized. With regard to group composition, the following results were expected:

- ***Hypothesis 1*: Peer network groups will be motivationally homogeneous (self and teacher reports).** Individual's engagement will be more similar to peer network members than to non-peer network members. Thus individuals high in school motivation will be in peer groups with others who also highly

motivated; individuals low in school motivation will be in peer groups with others who are also low in school motivation.

- ***Hypothesis 2*: Peer network groups will be behaviorally homogeneous.** Individual's classroom behavior will be more similar to peer network members' classroom behavior than non-peer network members. Thus individuals who exert high levels of on-task classroom behavior will be in peer groups with others who exert similar levels of on-task behavior and individuals who exert high levels of off-task behavior will be in peer groups with others who exert similar levels of off-task behavior.

Motivational homogeneity of peer group networks at one time period will give evidence that peer groups are organized around school motivation and support others studies that have found similar results (see Kindermann, 1993; Kindermann et al., 1996). Observational evidence of behavioral homogeneity would substantiate these findings.

Socialization Mechanisms of School Motivation

Peer socialization can proceed in either positive or negative directions and may differ across classmates who are within the individual's peer network and classmates outside of the individual's peer network. In addition, socialization influences are bi-directional, thus reciprocal effects of the individual's classroom engagement on peer (and teacher) behavior can be expected. However, the reciprocal effects were not examined in the proposed study; only teacher and peer

contingencies following the target individual's on- and off-task behavior were examined. From a learning theoretical perspective, these contingencies can be interpreted as learning conditions for students' everyday classroom behavior. With regard to socialization of classroom engagement, observations of sequential patterns of interactions were expected to yield the following results:

- *Hypothesis 3*: **Patterns of social affirmation contingencies will differ depending on whether a group member or non-group member interacts with the target individual.**

  Specifically, the results should illustrate that contingent approval from the teacher differs from contingent approval from both peer group members and non-peer group members. The same is also expected with regard to contingent disapproval. Additionally, it is expected that contingent approval from peer group members will differ from contingent approval from non-peer group members. This is also with regard to contingent disapproval.

- *Hypothesis 4*: **Patterns of social affirmation contingencies from peer group members, non-peer group members, and the teacher will differ for highly motivated individuals versus individuals low in school motivation**.

  Specifically, it is expected that with regard to on-task behavior, those students who are high in school motivation will likely receive more contingent approval from peer group members than non-peer group members. The teacher is expected to show more contingent approval than both peer

group members and non-peer group members for highly engaged students. For students low in school motivation, it is expected that approval contingencies are more likely to be from both non-peer group members and the teacher than from peer group members. With regard to off-task behaviors, it is expected that students low in school motivation will be more likely to experience contingent disapproval from non-peer group members. It is also expected that highly motivated students (and not low motivated students) will receive contingent approval from non-peer group members.

The mechanism, social affirmation, could provide a parsimonious explanation for the phenomenon that the motivationally "rich" get "richer" and "poor" get "poorer" across time. If engaged individuals are more likely to be affirmed for on-task behaviors from non-peer group classmates and the teacher, while disaffected individuals are more likely to be affirmed (from peer group members) for their disruptive, off-task behavior (despite the fact of negative responses from non-peer group members and the teacher), it could explain why disaffected individuals tend to become more disaffected in school across time.

If patterns of social affirmation contingencies following the target individual's behavior differ between peer network members and non-peer network members (and the teacher), one could conclude that peer network members contribute differently to the individual's learning than non-peer network members and the teacher.

Results

Peer Context Structure

A computer program called *Networks* (Kindermann & Kwee, 1991) combined the informant's group nomination and constructed a "co-occurrence" matrix to determine group structures. This is a matrix that contains frequencies with which each nominee is nominated to be in the same group as any other nominee (see Table 1 on page 50). The matrix was analyzed using binomial z-tests that identified, for any given child, the probability with which he or she was significantly connected to any other given child ($p < .01$).

To present an example (see Table 1 on page 50; with 21 interviews in a classroom of 25 children), AMY was nominated to have a group 19 times. BEV was nominated a total of 17 times. Of the 19 times AMY was nominated to have a group, BEV was nominated to be a member of the same group 15 times (refer to Table 1 on page 49). The conditional probability that AMY is nominated to be in a group with BEV is .96. The total number of groups generated by the 21 respondents was 109, therefore, the expected (unconditional) probability for BEV to be found in any group is .16 (19/109). For BEV to be nominated as being in a group with AMY, the test yields a z score of 8.33 which is significant ($p < .001$). Thus, BEV is significantly connected to AMY and is therefore considered as being in the same peer network as AMY. This procedure was applied to each individual's co-nominations in class.

Co-Occurence Matrix of Students in the Classroom

Student	AMY	BEV	DEE	CAM	EVE	ARI	DON	BEN	ENO	INA	HEA	JOY	LYN	KEN	JAY	LEV	MAC	FOZ	CAL	GUS	GIN	FAY	KIM	HAL	IAN	*Total Nom*
AMY	0	15	15	13	8	1	1	1	1	2	3	1	1	0	0	0	0	1	1	1	3	7	1	0	0	*19*
BEV	15	0	14	12	7	0	0	0	0	1	2	1	1	0	0	0	0	0	0	0	2	5	1	0	0	*17*
DEE	15	14	0	11	7	0	0	0	0	2	2	1	1	0	0	0	0	0	0	0	2	6	1	0	0	*16*
CAM	13	12	11	0	11	0	0	0	0	1	2	1	1	0	0	0	0	0	0	0	2	6	1	0	0	*16*
EVE	8	7	7	11	0	0	0	0	0	1	3	1	1	0	0	0	0	0	0	0	4	8	1	0	0	*17*
ARI	1	0	0	0	0	0	23	22	21	0	0	0	0	2	1	3	0	16	12	7	0	0	0	9	1	*25*
DON	1	0	0	0	0	23	0	21	20	0	0	0	0	1	2	2	0	16	12	7	0	0	0	10	2	*25*
BEN	1	0	0	0	0	22	21	0	25	0	0	0	0	2	1	3	0	17	11	8	0	0	0	10	2	*26*
ENO	1	0	0	0	0	21	20	25	0	0	0	0	0	2	1	3	0	17	10	8	0	0	0	10	2	*25*
INA	2	1	2	1	1	0	0	0	0	0	7	4	4	0	0	0	0	0	0	0	1	2	3	0	0	*10*
HEA	3	2	2	2	3	0	0	0	0	7	0	4	4	0	0	0	0	0	0	0	8	1	5	0	0	*16*
JOY	1	1	1	1	1	0	0	0	0	4	4	0	13	0	0	0	0	0	0	0	2	0	5	0	0	*14*
LYN	1	1	1	1	1	0	0	0	0	4	4	13	0	0	0	0	0	0	0	0	2	0	4	0	0	*13*
KEN	0	0	0	0	0	2	1	2	2	0	0	0	0	0	3	9	12	1	0	2	0	0	0	1	1	*15*
JAY	0	0	0	0	0	1	2	1	1	0	0	0	0	3	0	4	2	0	0	1	0	0	0	2	6	*8*
LEV	0	0	0	0	0	3	2	3	3	0	0	0	0	9	4	0	7	2	1	4	0	0	0	3	2	*13*
MAC	0	0	0	0	0	0	0	0	0	0	0	0	0	12	2	7	0	0	0	0	0	0	0	0	0	*12*
FOZ	1	0	0	0	0	16	16	17	17	0	0	0	0	1	0	2	0	0	12	9	0	0	0	10	2	*21*
CAL	1	0	0	0	0	12	12	11	10	0	0	0	0	0	0	1	0	12	0	6	0	0	0	4	1	*14*
GUS	1	0	0	0	0	7	7	8	8	0	0	0	0	2	1	4	0	9	6	0	0	0	0	15	3	*19*
GIN	3	2	2	2	4	0	0	0	0	1	8	2	2	0	0	0	0	0	0	0	0	5	4	0	0	*12*
FAY	7	5	6	6	8	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	5	0	1	0	0	*12*
KIM	1	1	1	1	1	0	0	0	0	3	5	5	4	0	0	0	0	0	0	0	0	4	1	0	0	0	*10*
HAL	0	0	0	0	0	9	10	10	10	0	0	0	0	1	2	3	0	10	4	15	0	0	0	0	4	*19*
IAN	0	0	0	0	0	1	2	2	2	0	0	0	0	1	6	2	0	2	1	3	0	0	0	4	0	*9*

This matrix represents the number of times each given individual was nominated as being in the same group as any other individual.

In this classroom, 21 respondents generated a total of 107 groups.

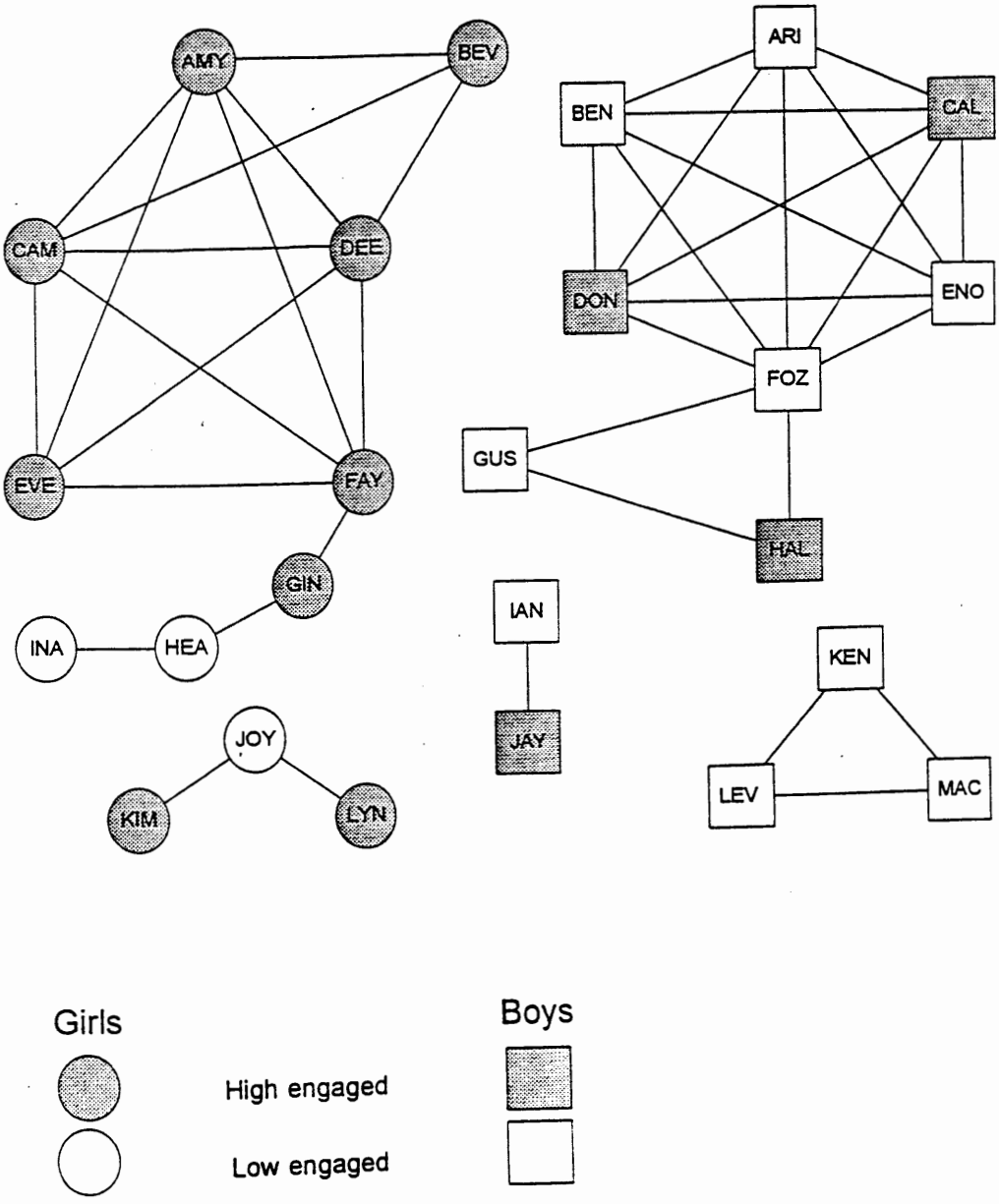
*Note: Includes all students in the classroom. Total nominations are necesarily smaller than the sums of multiple co-nominations

The information derived from this procedure was then used to construct a composite cognitive social map of the entire classroom (see Figure 1 on page 52) . It should be noted that the lines represent significant connections and positions are arbitrary (i.e., they do not represent any hierarchial order or importance). Across reporters, group nominations were consistent with this composite map (kappa = .73); there were no gender differences in reliability. On average, a student had 3.6 other students in his or her network, and network size ranged from dyads (IAN and JAY) to one network that contained eight students (FOZ, HAL, GUS, ENO, DON, CAL, ARI, and BEN) There was no overlap between boys' and girls' peer networks.

Figure 1

Social Networks in a 5th Grade Classroom ($p < .01$).

Note that individuals' positions are arbitrary and based on drawing convenience only.



Group Composition

Hypothesis 1: Peer networks will be motivationally homogeneous. Individual engagement scores were obtained by averaging the behavioral engagement and motivational orientation items within each scale of the teacher reports. (Prior to calculating the engagement scores, negative items were reversed.) A median split was used to define groups of students as highly engaged vs. low engaged. Students whose score was above the median were defined as highly engaged (9 female, 4 male) and students whose score was below the median were defined as low engaged (3 female, 9 male). On average, children were quite motivated (3.0); children's individual scores ranged from 2.06 to 3.84 on the 4-point scale.

In order to form peer context scores for each child, the engagement scores of the other children who were significantly connected with this child were averaged. For example (see Figure 1 on page 52), AMY's peer context score was the average of BEV'S, CAM'S, DEE'S, EVE'S, FAY'S individual engagement scores. FAY'S peer context score was the average of AMY'S, CAM'S, DEE'S, EVE'S, AND GIN'S. Note that scores of the three non-participants were estimated as the averages of the participating other children of the same gender; this made it possible to include children who had peer group averages but missing individual values (see Table 2 on page 54 for individual engagement scores and peer context scores).

Table 2

Individual Engagement Score and Peer Context Engagement Score
Measured by Teacher Reported Behavioral Engagement and Motivational Orientation

Student	Peer Group Members	Individual Score	Peer Context Score
FOZ	ARI, DON, BEN, ENO, CAL, GUS, HAL	2.53	2.94
HEA	INA, GIN	2.15	2.74
JOY	LYN, KIM	2.52	3.48
EVE	AMY, DEE, CAM, FAY	3.84	3.49
CAL	ARI, DON, BEN, ENO, FOZ	2.95	2.67
ARI	DON, BEN, ENO, FOZ, CAL	2.67	2.72
DON	ARI, BEN, ENO, FOZ, CAL, HAL	3.69	2.75
JAY	IAN	3.48	2.47
DEE	AMY, BEV, CAM, EVE, FAY	3.74	3.57
BEN	ARI, DON, ENO, FOZ, CAL	2.06	2.87
ENO	ARI, DON, BEN, FOZ, CAL, HAL	2.39	2.97
LEV	KEN, MAC	2.37	2.79
AMY	BEV, DEE, CAM, EVE, FAY	3.09	3.70
HAL	DON, ENO, FOZ, GUS	3.91	2.87
BEV	AMY, DEE, CAM	3.79	3.49
CAM	AMY, BEV, DEE, EVE, FAY	3.64	3.59
IAN	JAY	2.47	3.48
GIN	HEA, FAY	2.95	2.81
KIM	JOY	3.51	2.52
LYN	JOY	3.45	2.52
INA	HEA	2.53	2.15
FAY	AMY, DEE, CAM, EVE, GIN	3.48	3.45
GUS	FOZ, HAL	2.61	3.13
KEN	LEV,MAC	2.61	2.49
MAC	KEN,LEV	2.61	2.49
Mean Engagement		3.00	2.96
Standard Deviation		0.59	0.44

Correlations examined the correspondence between individuals' motivation scores with their peer group's motivation scores with regard to teacher reported motivation. Highest correlations were found for teacher reported behavioral engagement and motivational orientation. However, even these were unexpectently low (scores from both behavioral engagement and motivational orientation were combined to obtain a significant engagement score for each child). Due to the overall low correlations among individual's motivation and the motivational profile of their peer group, correlations among individual's motivation with the average of their non peer group members' motivation score were also calculated.

Overall, students tended to be somewhat similar in their engagement to the members of their peer networks, but different from their other classmates. There was a low correlation between students' own engagement and the engagement profile of their peer group members, $r = .28$, $n = 25$, $p < .10$ and a moderately high negative correlation between individuals' own engagement and the averages of their non-peer group members, $r = -.56$, $n = 25$, $p < .01$.

Hypothesis 2: Peer networks will be behaviorally homogeneous. Percentages of on-task behavior were obtained for each individual and his/her peer group. Individual percentages were determined as the number of times the person was observed on-task, divided by the individual's total behavioral count (across all behavioral sessions). On average, children had a high rate of on-task active behavior (83%) and a low rate of off-task active behavior (17%). Children's individual rates of

on-task active behavior ranged from 73 % to 93% whereas their rates of off-task behavior ranged from 2% to 26 %.

Peer group percentages of on- and off-task active behavior were calculated by averaging all members' percentages. Correlation analyses examined the correspondence between the individual's percentage of on- as well as off-task behavior with his/her peer group's percentage. Overall, students tended not to be similar in their on-task active behavior to the members of their peer networks, but different from their non-peer group members (r = .07, n = 25, p = NS; r = -.50, p < .05 respectively). With regard to off-task active behavior, individuals' behavior was also not related to their peer group members' behavior and only slightly positively to their non-peer group members (r = -.08, n = 25, p = NS and r = .13, n = 25, p = NS respectively). Hence, there is little evidence for behavioral similarity.

Sequential Analysis of Observations

Bakeman and Quera's (1995) program *SDIS* and *GSEQ* was used for sequential analyses. Bakeman and Quera define a standard that they call the "sequential data interchange standard (SDIS). They claim that this standard is easy to use and allows researchers to represent important aspects of their data. The *SDIS* program reads data in ASCII format (represented in the standard described in Bakeman and Quera's book) and converts them to a modified version that facilitates subsequent analysis by the GSEQ program. *GSEQ* is then capable of generating a variety of sequential statistics.

Sequential analyses were conducted to examine the interaction patterns between each individual and the teacher, his or her peer network members and non-peer network members. The analyses compare the conditional probabilities for behavior events, given that a specific antecedent behavior had occurred previously, with unconditional probabilities with which these events are expected to occur overall (base probabilities). Thus, the probabilities of particular contingent responses from specific social partners, following the target student's on-task or off-task behaviors, can be determined. Deviations of conditional probabilities from base rates are tested with binomial z -tests. Deviations that are significantly positive (larger than 1.96 for the 5% level) indicate that a particular event is more likely to occur as a consequence of a specific antecedent than would be expected by chance (significantly negative deviations were not interpreted).

"Lumped" analyses of lag one were used because classroom routines often involved long sequences of uninterrupted student behaviors. This increased children's and social partner's expected observational frequencies (i.e., their percentages become larger because some target childrens' behaviors are not considered). Thus, only end-points of chains of identical events were considered (e.g., the end of an observation in which a student was coded as reading by him or herself in several 10-second intervals. Structural zeros were included for those behavior codes that could not follow each other (so that expected frequencies for a partner behavior to follow another partner behavior were set to zero). This is

important in uses in which sequential patterns are compared to codes that can follow each other (or repeat) with codes that cannot (or not repeat themselves). If structural zeros are not included for the expected (unconditional) probabilities, expected probabilities of codes that cannot follow each other (or repeat) are underestimated. These were usually coding errors in situations which many social partners interacted with a target student at the same time and coders had missed recoding the target child's behavior.

Socialization Mechanisms of School Motivation

Hypothesis 3: Patterns of social affirmation contingencies will differ depending on whether a group member or non-group member interacts with the target. A repeated measures analysis of variance examined contingency differences across partners using the adjusted residual contingency scores from the lag analyses, with the factors partner (3), on-vs off-task (2), and approval vs. disapproval contingency (2). There was an interaction of all three factors $F(2, 23) = 8.29$, $p = .002$. As expected, social partners differed in their approval and disapproval contingencies following students' on- and off-task behaviors. However, these differences were mostly due to the teacher and were due to contingencies following off-task behavior.

The teacher was less likely to show contingent approval following students' off-task behavior than both children's group members, $t(25) = 5.86$, $p < .001$, and non-members, $t(25) = 2.28$, $p < .05$. With regard to contingent approval following

on-task behavior, the teacher did not respond differently than group members, $t(25) = .94$, $p > .05$ and non-group members, $t(25) = .54$, $p > .05$.

With regard to differences between members and non-members, there was only a main effect denoting non-members' tendency to show higher overall contingency levels, $F(1,24) = 7.86$, $p < .05$. Contingent approval following on-task behavior from peer group members did not differ from contingent approval from non-peer group members, $t(25) = .18$, $p > .05$. This was also found for contingent disapproval $t(25) = .09$, $p > .05$. Overall, the comparisons did not support the expectations with regard to peer groups; there were large intra-individual differences.

Hypothesis 4: Patterns of social affirmation contingencies from peer group members, non-peer group members, and the teacher will differ for highly motivated individuals and individuals low in school motivation. See Figures 2, 3, 4 and 5 on page 61, 62, 63, and 64, respectively, for graphs of separate pooled sequential analyses on groups of high versus low engaged students. Shaded areas denote significant contingencies ($p > 1.96$).

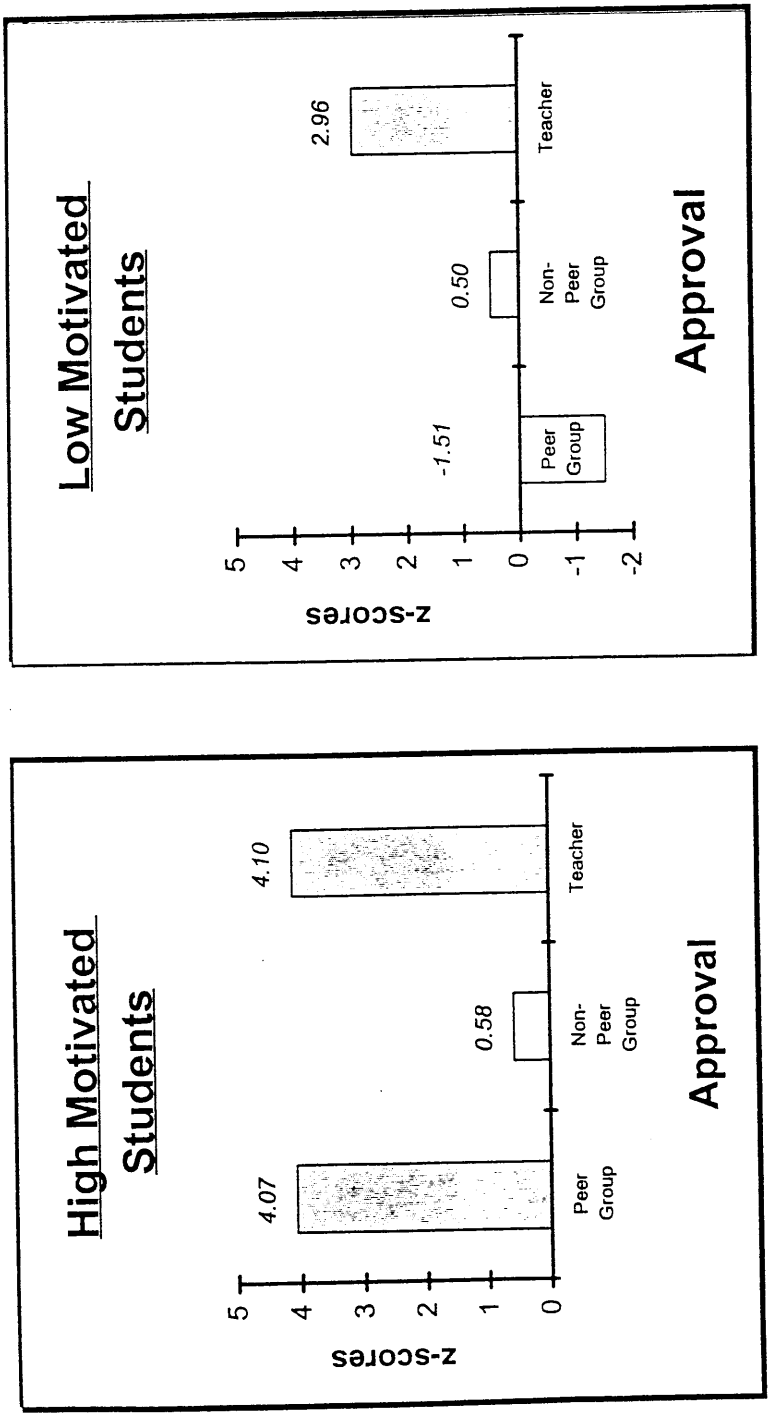
A multiple regression (controlling for gender and network size) examined whether the social contingencies children experienced in interactions with members and non-members of their peer groups as consequences of their on-and off-task behavior (adjusted residuals for approval and disapproval) were related to their own level of engagement.

In the regression, two contingencies were significantly related to students' motivational level. Following students' **on-task behavior** in the classroom, there were no relations with teacher contingencies (note: there were also no hypotheses for teacher contingencies). Following their active on-task behaviors, higher motivated students were more likely to receive approval from members of their peer groups β = .63, $t(25) = 2.24$, $p < .05$. As Figure 2 shows, only highly motivated students received contingent approval from peer group members at all (conditional probability = .05, expected probability = .03; adjusted residual = 4.07), while approval was random (residual < 1.96) for low motivated students (conditional probability = .01, expected probability = .02; adjusted residual = -1.51). Hence, low motivated students had only the teacher to rely on for support for on-task behavior.

Following their active **off-task behaviors**, lower motivated students were more likely to experience disapproval from classmates who were **not** members of their peer networks, $\beta = -.88$, $t(25) = -2.54$, $p < .05$. As can be seen in Figure 5, disapproval from non-peer group members was a contingent response for both high (conditional probability = .03, expected probability = .01, adjusted residual = 5.34) as well as low engaged students (conditional probability = .05, expected probability, =.005, adjusted residual = 9.36). However, low engaged students did experience this response on a higher overall level of contingency.

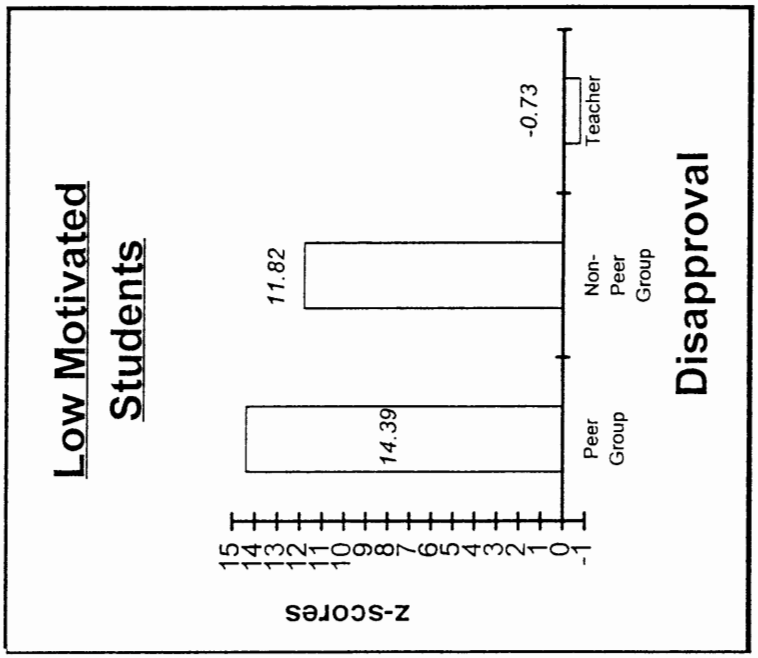
Figure 2

Social Partners' Approval Contingencies Following Students' Active On-Task Behaviors



Social Partners' Disapproval Contingencies Following Students'

Active On-Task Behaviors



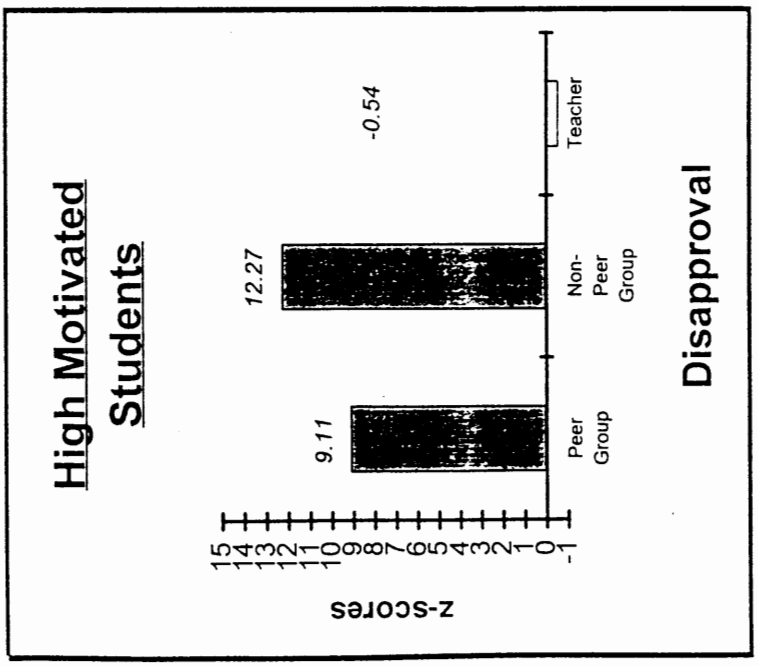


Figure 4

Social Partners' Approval Contingencies Following Students' Active Off-Task Behaviors

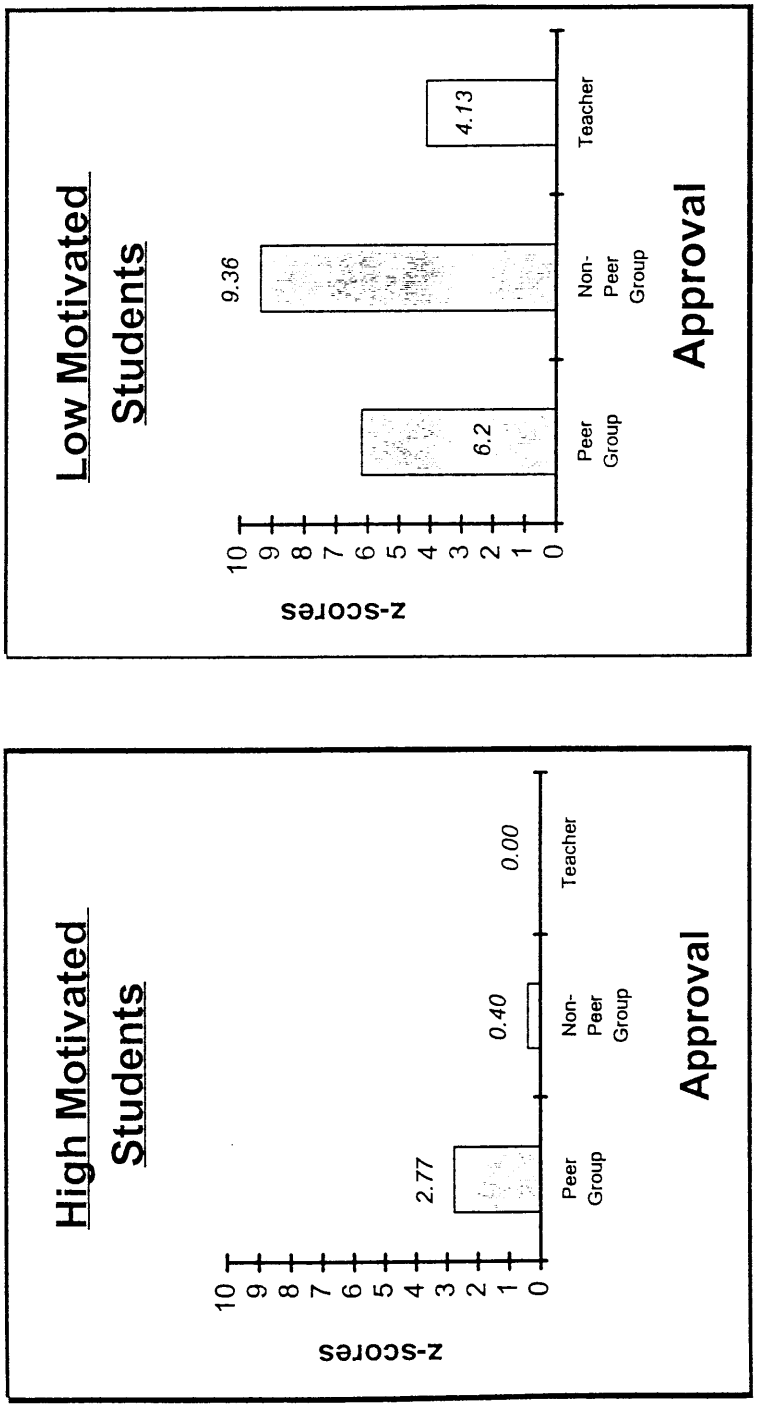
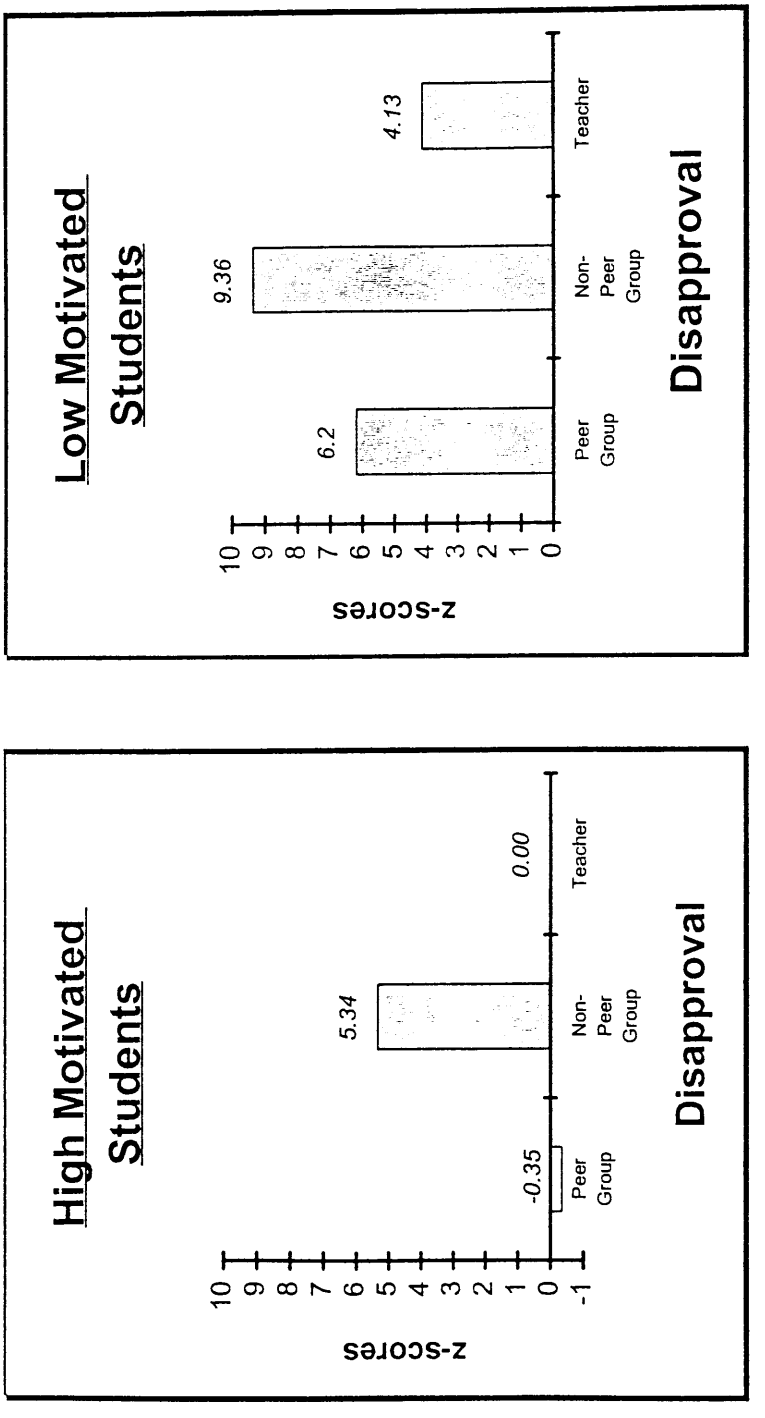


Figure 5

Social Partners' Disapproval Contingencies Following Students' Active Off-Task Behaviors



Discussion

The discussion will first summarize the findings with regard to the classroom peer network structures. Following this summary, the results with regard to group composition (hypotheses 1 & 2) and socialization mechanisms (hypotheses 3 & 4) will be summarized and implications for these results will be presented. The final sections will focus on the study's strengths and limitations as well as provide directions for further research on mechanisms of peer influence in the classroom.

Classroom Peer Network Structures

On average, there were 3.6 other students in each child's peer network. Network size ranged from dyads to one network with eight students. There was no overlap between boys' and girls' peer networks. These findings are consistent with those of other studies evaluating the structure of peer networks at this age level (Kindermann, 1993; Kindermann, et al, 1996). It is usually not before 6th or 7th grade that girls' and boys' peer networks begin to overlap (e.g. Cairns et. al, 1995; Kindermann, et. al, 1996); boys' and girls' peer groups typically remain sex segregated until at least middle school.

Group Composition

Hypothesis 1: Peer networks will be motivationally homogenous. Overall, the students were quite motivated. Interestingly though, there was a surprisingly low correlation between individuals' own engagement score and their peer group engagement profile. This is in contrast to earlier findings on peer groups (e.g.

Kindermann, 1993, Kindermann et al, 1996) illustrating that individuals' own engagement scores highly correlate with their peer group engagement profile, as well as to friendships studies (Kandel, 1978, Berndt & Keefe, 1996).

Because of the low correlation between individual engagement and the motivational profile of the individuals' peer group profile, the association between individuals' own engagement scores and those of other students outside of their peer network was examined. A moderately high negative correlation was found between the individual's engagement score and the engagement scores of non-peer group members. Thus, the results on peer network composition suggest that students were not motivationally similar to members of their peer network but still different from those other classmates who were not members.

Hypothesis 2: Peer networks will be behaviorally homogenous. On average, students were most likely observed to be on-task. Similar to the findings for motivational engagement, individuals were not similar to their peer group members' with regard to the amount of on-task behavior in which they engaged. They differed however, from non-peer group members. With regard to off-task behaviors, individual behavior was not related to either peer group members' nor non-peer group members' behavior.

As noted the relations for motivation and behavior were lower than expected. Several explanations are possible. It is possible that the peer network interviews were conducted too early in the year to obtain "true" peer groups for this class. Although

previous studies (e.g. Kindermann, 1993 & Kindermann, et. al, 1996) have conducted peer network interviews within the first few months of the school year, they have been done in classrooms that were more traditional with regard to classroom structure and format.

The current classroom was characterized by a high amount of group work. Work groups were sometimes assigned and sometimes self-selected. With the implementation of "jigsaw" classrooms, the teacher in the current study would specifically assign highly motivated students to sit next to and/or work with students who were struggling academically. This may dilute the motivational homogeneity of peer groups that exists in more traditional classrooms. As noted earlier, the peer network procedure used in this study assumes that the students are expert observers of who hangs out with whom in the classroom. In essence, students nominate who they see hanging out together. If work groups in the classroom are sometimes assigned and sometimes not, an individual child can be observed as "hanging out with" a variety of his or her classmates in the classroom. Some of the groups are naturally selected, and perhaps motivationally more homogeneous, but some are work-based and likely less homogeneous.

Keep in mind that the current study was conducted two months into the school year. It cannot, therefore, be assumed that each child (through casual observation) has been able to distinguish between students who "hang out together" because they **chose to** or because they were **assigned to**. Thus, student's nominations

of peer networks may not be as accurate in the current study as were those in earlier studies that did not have this potential confound. This explanation can be statistically illustrated by comparing the reliability index in the current study with the reliability indices in earlier studies. Although the reliability index in the current study showed high consistency with the composite map (kappa = .73), it was lower than the reliability indices in earlier studies (Kindermann, 1993 & Kindermann et. al, 1996, respectively).

Socialization Mechanisms

Hypothesis 3: Patterns of social affirmation contingencies will differ depending on whether a group member or non-group member interacts with the target. As expected, there were differences across social partners with regard to contingent approval and disapproval following a target students' on-and off-task behaviors. However, these differences were **only** due to the teacher. Although the teacher was less likely to approve of off-task behavior than peer group members and non-peer group members (as expected), there were no differences in approval contingencies from social partners following on-task behaviors. The same was also found with regard to teacher disapproval following both on- and off-task behaviors.

Although contingency differences between peer group members and non-peer group members following both on-and off-task behaviors were expected, they were not found. Thus classmates responded overall similarly to target children's on-and off-task behavior regardless of their peer group affiliation. This overall similarity,

however, held true only as long as children's level of school motivation was not considered.

Hypothesis 4: Patterns of social affirmation contingencies from peer group members, non-peer group members, and the teacher will differ for highly motivated individuals and individuals low in school motivation. As expected, those students who were high in school motivation received more contingent approval from peer group members than from non-peer group members following their on-task behavior. Interestingly, students low in school motivation did not receive (significant) contingent approval from either peer group members or non-peer group members, rather, they had only the teacher to rely on for approval of on-task behaviors.

Results with regard to off-task behaviors were as expected: students low in school motivation were more likely to experience contingent disapproval from non-peer group members. Also as expected, highly motivated students received contingent approval from non-peer group members following off-task behavior. Contradicting our expectations, however, non-peer group members also showed contingent approval following off-task behaviors from low motivated students.

Overall, the results are consistent with the notion that children's peer group members can be influential socialization agents for children's developing school motivation and that social affirmation can be a specific mechanism by which this socialization occurs. Additionally, the results support the hypothesis that children's peer group members and non-peer group members can provide different learning

conditions for children's behavior in the classroom and that these differences are related to children's motivational level in the classroom. In specific, the results suggest that peer networks can be supportive contexts for on-task behavior, especially for highly motivated students, and that non-group members keep in check low motivated students' off-task behaviors.

With regard to off-task behaviors, children's peer group members were not more supportive of their off-task behaviors than were their non-peer group members as expected. Rather, **both** peer group members **and** non-peer group members of children's peer networks appear to support off-task behaviors. The findings showed no differences in the overall high approval contingencies from classmates. A likely explanation is that all students in the classroom, regardless of their peer group affiliations, enjoyed their classmates' off-task behaviors (to some extent), and approved of these behaviors when shown. This explanation is consistent with the saying "everyone laughs at the class clown". It is possible that a highly motivated student may disapprove of this disruptive (off-task) student internally (e.g., thinking to him or herself "what an idiot"), yet he or she may still overtly show approval. Since the study's focus was on observations of students' overt behaviors in the classroom and not on the internal processes children have, it can only be shown that students overall approve of (at least overtly) off-task behaviors regardless of peer group affiliation.

Strengths and Limitations of the Study

The current study identifies social affirmation as a particular mechanism that theoretically is able to produce changes in individuals across time. Evidence of social affirmation as a mechanism of influence, provides support for interpreting existing correlational findings on individual change in peer systems as evidence of causal influences. Additionally, the results of this study, from a learning theoretical perspective, lead one to expect that if peer groups were to remain stable (with regard to motivational orientation), children who experience supportive contingencies for their on-task behavior from peer group members would increase in engagement over time. Conversely, children who are in groups of lower motivated students would increase less (or even decrease), unless they manage to join more engaged groups. Thus, this study is a step in the direction of providing an explanation as to why those students who enter the classroom motivationally "rich", tend to get "richer" over time.

Although the current study provides evidence that classmates, particularly those within children's peer network, are important socialization agents in the classroom, there are limitations to the magnitude of interpretability this study has. First, one must consider the lack of generalizability for this particular study. Socialization mechanisms among peers were examined in only one classroom. Therefore, replications with a variety of classrooms and teachers are needed. It

should be noted though, that generalizability was considered to be high across a variety of situations that normally occur in everyday classroom interactions.

Another limitation to be considered is with regard to the network structures and the low correlations found between individual engagement and the level of engagement among peer group members. As mentioned earlier, this could have been simply a result of timing for this particular classroom. It may have been too early in the year to reliability identify who hangs out together with whom in a classroom that is organized around allowing the child to work with a variety of students both self-selected and assigned (at times intentionally assigning a highly motivated student with a student low in school motivation).

In addition, if the groups are not homogenous, the socialization influences within these groups become less clear. Hypotheses with regard to socialization mechanisms were derived based on the assumption that individuals affiliate with others who are similar to themselves in school motivation and that socialization from highly motivated groups would go in the positive direction, whereas socialization from low motivated groups would go in the negative direction. In the current study though, group homogeneity with regard to school motivation was low. Thus, peer groups may include both highly motivated and low motivated students. This is clearly the case in the large boys' group (see Figure 1) where FOZ's group has four highly motivated students and three low motivated students. If the individual has both high and low motivated students in his or her peer group, it is possible that he or

she is receiving differential contingencies based on the social partner's engagement. Thus, high and low motivated students may exert different influences.

A third limitation may have to do with the students themselves. As is typical for observational studies, there was a large amount of interindividual differences. Some students were highly active (both on and/or off task) in the classroom, thereby receiving more contingencies following their behaviors, while others were overall more passive. Also, some students often worked alone (which was supported by the teacher), and thus received only very small amounts of approval and disapproval contingencies. The extreme group comparisons were negatively affected by the interindividual differences.

A final limitation has to do with the observational design and system. The behaviors that were of most interest in this study (approval, disapproval, and off-task behavior) were the lowest occurring behaviors. Only behaviors that directly and/or explicitly approved a target student's behavior were coded as Approval. Other, more subtle forms of approval, such as imitation, were coded as Cooperation (a category with rather high frequency levels). The same was also true for Disapproval. Thus, one could argue that the approval and disapproval categories were defined too strictly. It should be noted, however that analyses of cooperation and disagreement categories were even less conclusive.

While the Approval and Disapproval categories may not have been inclusive enough, the Off-Task category may have included too many behaviors. For example,

the current coding system included students' jokes and funny remarks as incidences of off-task behavior. These may have elicited positive responses from all kinds of classmates (who's not going to laugh at a good joke?). However, other kinds of off-task behaviors may not be met with such uniform approval. For example, students low in school motivation might not receive approval from non-peer group members for their outright "obnoxious" off-task behavior. Further studies will need to use a more restrictive definition.

Conclusion

This study supports evidence suggesting that children's peer networks may be influential for their classroom behavior (Hartup, 1983). In specific, the current study provides supportive evidence that members and non members of children's peer groups can provide different learning conditions for children's classroom behavior and that these differences are related to children's own level of engagement. Overall, the role of peer networks in the classroom appears to be more positive than negative. This goes in line with indications in the literature that students' peers generally do encourage positive classroom behaviors, thereby providing a support system for school adjustment (Berndt & Keefe, 1995, 1996; Brown, Clasen, & Eicher, 1986; Ladd, 1990). Also, there are other indications in the literature that suggest that students may know what is expected in a given setting and present themselves in the "socially accepted" manner in order to gain approval from both teachers and peers (Juvonen, 1996).

By showing that peer interactions can indicate learning mechanisms in the classroom, the study provides a step in the direction of explaining the motivationally "rich" get "richer", "poor" get "poorer" phenomenon. However, with the study's limitations one must not make definite conclusions. Further research is needed with regard to mechanisms of influence in the classroom. One step would be to replicate this study using more than one classroom and teacher and observing both in the Fall and in the Spring of the school year.

As noted, the behaviors of most interest were the lowest occurring behaviors. Simulation studies, designed to increase the rates of off-task and disapproving behaviors appear to be a potential solution. Simulation strategies may be the best way to examine (naturally) rare consequences of rare but important behaviors. For example, studies in which students interact with their friends in laboratory environments (e.g., Berndt, et al., 1990; Dishion, Spracklen, Andrews, D. W., & Patterson, G.R., 1996) can be regarded as simulations that remove the natural inhibitory contingencies for non-academic behavior which were observed from non-members of children's groups. Such lab interactions that include only friends may show more outgoing and active off-task behavior. Friends may escalate, if non-peer group members are not around to provide negative contingencies, and rates of off-task behavior may be increased. Simulations could also include both natural group members and non-group members, and members could be instructed to show off-task behaviors. This should also increase rates of social partner's disapproval.

A final thought about alternative research routes is with regard to the specific mechanism of influences that was examined in the study. In this study, **social learning** contingencies were examined as **one** possible mechanism. However, this is not the only path by which groups can influence individuals. For example, other mechanisms such as identification and internalization could be studied. These may be examined as alternatives to learning mechanisms or perhaps in combination with these mechanisms. The question of whether many mechanisms can be identified and how they can interact together appears to be a promising goal for future research on peer influence.

In sum, this study provides the initial step in identifying a specific mechanism of influence which helps to explain **how** peer groups influence individuals. Observations of multiple classrooms and multiple teachers across the school year are necessary, as well as refinements of the coding system to focus on the rare (but important) behaviors that occur in the classroom setting. Perhaps with further (direct) examinations of mechanisms, an explanation will be obtained as to why those students who do well in school, continue to do well, while those who don't, often continue to get worse.

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Appendix A

Parent Information Letter and Consent Form

Parent Information Letter (PSU Letterhead)

Dear Parent,

XXXX, 1996

Your child's teacher has volunteered to participate in a research project on students' friendships and peer groups and their motivation in school, which is conducted in cooperation with the Beaverton School District and Portland State University. With this letter, I would like to tell you about this project and request your permission for your child to participate.

The project will involve several parts in which students are asked to participate. We will conduct individual interviews, ask students to fill out questionnaires about how they feel in school, and will conduct classroom observations during regular lessons. We would like to ask you for your permission for your child to participate in all of these aspects of our study.

PURPOSE OF THE RESEARCH

We believe that school is a place where students learn competencies that will enable them to accomplish their goals later in life. While academic contents form the major part of the agenda at school, we also believe that school is a place where people learn how to get along with others by forming friendships with their peers. And we believe that this is also a very important part of growing up. In particular, we are interested in how students' friendships at school are developing and how they are related to how motivated students are in school.

With these concepts in mind, we would like to obtain your permission for your child to fill out a questionnaire about how he or she feels in school. We would also like to get your permission for us to interview your child about peer groups and friendships in school, and we would like permission to include your child in observations of what normally happens in classroom lessons. Although we have already the permission of your child's teacher, it is necessary that we receive your permission as well.

You will find attached a formal permission letter (two copies) which we would like you to read and sign if you agree for your child to participate. If you give us your permission, please have your child return one of the copies to her/his teacher by **XXXX** and keep the other copy for yourself. If we do not receive a signed copy from you by **XXX**, we will assume that you prefer your child not to participate.

STUDENT'S PARTICIPATION

We hope that you can support our work. If you give us your permission for this study, we will ask your child whether s/he agrees to participate her/himself. If so, we will hand out a questionnaire asking about how your child feels in school, how much s/he likes to be in school, and how much s/he likes school activities. This will take about 20 minutes, and the time of the survey will be determined by your child's teacher.

Also, we will be observing student interactions in the classroom for about 15 days, observing the students for whom we have parental and individual permission to participate. Observations will be conducted by trained study administrators supervised by myself and Dr. Thomas Kindermann. All information obtained from the observations will be kept strictly confidential and this will be explained to all of the participants. Nobody else, unless otherwise specified by your child, will be allowed to see the information derived from these observations. At no time will your child be compared to any other student in the class. We are merely examining how the students interact with one another in the classroom. We will take care in making arrangements with the teachers so not to disturb any classroom routines.

There will be no consequences at all if your child prefers not to participate. The results of this study will be shared with parents (or teachers) only in a general form regardless of whether their own child participated or not. Let me assure you that we are interested in group results only. As previously mentioned, at no time will any individual comparisons be undertaken and we will take great care in making it impossible for any individual student to be identified in the data.

If you have any questions after reading this letter and the attached form, or at any time during the research project, please feel free to contact me at (503) 774-0702 or Dr. Thomas Kindermann at (503) 725-3970. We look forward to working with you, your child, and the school district on what we think is an important and exciting project. I will be in touch with you as the project progresses.

Thank you for your time.

Sincerely,

Nicole Sage
Graduate Student, Developmental Psychology
(503) 774-0702

Thomas A. Kindermann
Associate Professor, Developmental Psychology
(503) 725-3970

PARENT INFORMED CONSENT (please return to Mr. Shotola in original envelope)

I, ❑ parent ❑ guardian (check one box) of **XXXXXXXXXX**, hereby agree to allow my child to participate in the research project conducted by Nicole Sage, graduate student and Dr. Thomas A. Kindermann, Associate Professor at the Department of Psychology at Portland State University.

I understand that the specific study for which I give my child permission to participate in involves three parts, described below:

Part I. Questionnaire Survey

I understand that my child will participate in a questionnaire survey (about 20-30 minutes) conducted with his or her entire class by Nicole Sage and Dr. Kindermann or survey administrators trained by them. It has been explained to me that the purpose of this data collection is to learn how students feel in school. I also understand that, should I give my permission, my child will have the final say as to whether s/he will participate. Furthermore, it has been explained to me that my child will be free to answer only questions that s/he feels comfortable with, and that s/he will be free to terminate his/her participation at any time s/he wants.

Part II. Interview

I understand that my child will participate in an individual interview about friendships and peer relations In school which will last for about 15 minutes and will be conducted at a time to be arranged with his/her teacher. I understand that, should I give my permission, my child will have the final say as to whether s/he will participate. It has been explained to me that my child will be free to not answer any question that he or she does not want to answer, and to terminate the interview at any time, for any reason. I have been assured that the interview records will be kept strictly confidential, and that with the exception of Nicole, Dr. Kindermann, and their assistants, no individual will have access to them without first receiving the permission of my child.

Part III. Classroom Observations

I understand that my child will participate in classroom observations of interactions among students and with the teacher. It has been explained to me that the purpose of this data collection is to learn how students' friendships relate to how students feel about school and how they experience classroom routines. I also understand that, should I give my permission, my child will have the final say as to whether s/he will participate. It has been explained to me that my child will be free to choose not to be observed for any period of time and will be free to terminate her/his participation at any time. I have been assured that, with the exception of Nicole, Dr. Kindermann and their assistants, no individual will have access to the information derived from the observation without first receiving the permission of my child.

Nicole and Dr. Kindermann has offered to answer any questions I may have about the study and about what is expected from my child in the study. I have been assured that all information my child gives will be kept strictly confidential and that her/his identity will be kept anonymous to anyone other than Nicole, Dr. Kindermann and their immediate colleagues who also work on the project

I understand that my child will be assured that s/he will be free to withdraw from participation in the study at any time, without any consequences. Whether or not my child participates will have no consequences for her/him. Furthermore, my child and/or I will not receive any direct benefits from participating in this study, but her/his participation may help to increase knowledge which may benefit others in the future. I have also been assured that my child's participation in this study will not interfere with her/his normal classroom routines.

I do ❑ do not ❑ give my permission for my child to participate

_____ _____

Mother/Guardian Signature Date

I do ❑ do not ❑ give my permission for my child to participate

_____ _____

Father/Guardian Signature Date

Child's Name: _____

If you have any questions, please call Nicole at (503) 774-0702 or Dr. Kindermann at (503) 725-3970. This project is approved by the Human Subjects Research Review Committee of Portland State University. If you experience problems that are the result of your child's participation in this study, please contact the Chair of the Human Subjects Committee, Office of Grants and Contracts, 345 Cramer Hall, Portland State University, (503) 725-3417.

Appendix B

Engagement Questionnaire

Teacher Report

Student Engagement Questionnaire

Student: _____

Teacher: _____

Grade: _____

Subject: _____

This questionnaire is part of a study to understand student behavior in the classroom. Your candid observations and opinions will help us understand more about how what students do in the classroom is connected to learning. Thank you for your help.

		Very Characteristic Of This Student	Somewhat Characteristic Of This Student	Not Very Characteristic Of This Student	Not At All Characteristic Of This Student
1.	In my class, this student fights me at every turn.	4	3	2	1
2.	This student prefers classroom activities that are difficult.	4	3	2	1
3.	This student doesn't change his/her approach to solving problems, even when it isn't working.	4	3	2	1
4.	In my class, this student pays attention	4	3	2	1
5.	This student depends on me to make all decisions regarding his/her schoolwork.	4	3	2	1
6.	In my class, this student appears angry.	4	3	2	1
7.	This student doesn't try very hard.	4	3	2	1
8.	This student likes to figure out things for him/herself.	4	3	2	1
9.	In my class, this student pays attention only to topics or activities that interest him/her.	4	3	2	1
10.	This student is creative.	4	3	2	1

	Very Characteristic Of This Student	Somewhat Characteristic Of This Student	Not Very Characteristic Of This Student	Not At All Characteristic Of This Student
11. When this student is faced with a difficult problem or question in my class, s/he seems to enjoy the challenge.	4	3	2	1
12. In my class, this student appears anxious	4	3	2	1
13. This student likes to do things for him/herself.	4	3	2	1
14. This student works only as hard as necessary to get by.	4	3	2	1
15. This student isn't very creative when it comes to schoolwork.	4	3	2	1
16. This student concentrates on doing his/her work in my class.	4	3	2	1
17. When it comes to doing classroom assignments, this student doesn't think for him/herself.	4	3	2	1
18. This student does the best s/he can in school.	4	3	2	1
19. In my class, this student appears depressed.	4	3	2	1

	Very Characteristic Of This Student	Somewhat Characteristic Of This Student	Not Very Characteristic Of This Student	Not At All Characteristic Of This Student
20. This student often plays around with ideas that are in the questions.	4	3	2	1
21. This student prefers doing schoolwork that is easy for him/her.	4	3	2	1
22. In my class, this student appears happy.	4	3	2	1
23. This student only pays attention to subjects that interest him/her.	4	3	2	1
24. This student comes up with unique ways to do school assignments.	4	3	2	1
25. This student prefers assignments which s/he already knows how to do.	4	3	2	1
26. This student does more than is required of him/her.	4	3	2	1
27. This student doesn't like to figure out anything for him/herself.	4	3	2	1
28. This student works hard in class.	4	3	2	1

Appendix C

Engagement Questionnaire

Student Report

Informant #_____

Please circle the answer that is MOST TRUE for you. If you have any questions, just raise your hand and one of us will help you out.

The following three questions (A, B and c) are just for practice:

A. I am in 5th grade

Very true Sort of true Not very true Not true at all

B. I am in 3rd grade

Very true Sort of true Not very true Not true at all

C. I like ice-cream

Very true Sort of true Not very true Not true at all

The following 13 questions are about how you feel when you are in school:

1. I try very hard to do well in school.

Very true Sort of true Not very true Not at all true

2. When I'm in class, I participate in class discussions.

Very true Sort of true Not very true Not at all true

3. I pay attention in class.

Very true Sort of true Not very true Not at all true

4. When I'm in class, I concentrate on doing my work.

Very true Sort of true Not very true Not at all true

5. When I'm in class, I work as hard as I can.

Very true Sort of true Not very true Not at all true

6. I don't try very hard in school.

Very true Sort of true Not very true Not at all true

7. When I'm in class, I usually think about other things.

Very true Sort of true Not very true Not at all true

8. When I'm in class, I just act like I'm working.

Very true Sort of true Not very true Not at all true

9. I only pay attention to things that interest me when I'm in class.

Very true Sort of true Not very true Not at all true

10. When I'm in class, I feel nervous.

Very true Sort of true Not very true Not at all true

11. When I'm in class, I feel angry.

Very true Sort of true Not very true Not at all true

12. When I'm in class, I feel discouraged.

Very true Sort of true Not very true Not at all true

13. When I'm in class, I feel happy.

Very true Sort of true Not very true Not at all true

The following questions asks about your teacher:

14. I wish my teacher paid more attention to me.

Very true Sort of true Not very true Not at all true

15. I wish my teacher could spend more time with me.

Very true Sort of true Not very true Not at all true

16. I wish my teacher knew me better.

Very true Sort of true Not very true Not at all true

17. I wish I were closer to my teacher.

Very true Sort of true Not very true Not at all true

18. When I'm with my teacher I feel accepted.

Very true Sort of true Not very true Not at all true

19. When I'm with my teacher I feel like someone special.

Very true Sort of true Not very true Not at all true

20. When I'm with my teacher I feel ignored.

Very true Sort of true Not very true Not at all true

21. When I'm with my teacher I feel unimportant.

Very true Sort of true Not very true Not at all true

The following questions asks about your friends in school:

22. When I'm with my friends I feel like I belong.

Very true Sort of true Not very true Not at all true

23. When I'm with my friends I feel accepted.

Very true Sort of true Not very true Not at all true

24. When I'm with my friends I feel unimportant.

Very true Sort of true Not very true Not at all true

25. When I'm with my friends I feel left out.

Very true Sort of true Not very true Not at all true

26. I wish my friends spent more time with me.

Very true Sort of true Not very true Not at all true

27. I wish my friends like me more.

Very true Sort of true Not very true Not at all true

28. I wish my friends understood me better.

Very true Sort of true Not very true Not at all true

29. I wish I were closer to my friends.

Very true Sort of true Not very true Not at all true

Appendix D

Interview Data Sheet

DATA SHEET

Informant Number:_____ Grade:_____

Class/teacher:_____ Classroom:_____

GROUPS

Student Names from Class Roster	1	2	3	4	5	6	Alone (L)

GROUP DESCRIPTORS

NAME (Questions 2 and 4)	SPECIALTY (Questions 3 and 5)	OPENNESS
I		
II		
III		
IV		
V		
VI		
VII		
VIII		

Informant's Three Closest Friends:

1. _____

2. _____

3. _____