

Peer Influences on Risk-taking in Middle Childhood

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(ABSTRACT)

Unintentional injury is the leading cause of death and disability in children. Many injuries to school-aged children occur during unsupervised peer activities, but peer influences on risky behavior in preadolescence remain under-investigated. We examined peer context effects on reported risk-taking, identified predictors of peer influence, and compared peer influence in high- and low-social-functioning groups. Forty-one boys aged 8-10 years listened to scenarios in which they encountered opportunities for risk-taking (e.g., swimming unsupervised, playing with matches) with their best friends, with "cool guys" (desired peers), with disliked peers, and alone. They rated the likelihood that they would engage in risky behavior in each condition for each scenario. Children also completed measures of friendship satisfaction, peer orientation, and socially desirable responding. Parents completed the CBCL and an injury history form. Children reported more risk-taking with positive peers than alone, and less with negative peers than alone. Four variables (peer orientation, friendship satisfaction, social problems, mother unmarried) accounted for 77% of the observed variance in peer influence on risk-taking. Children in the high social competence group showed larger peer influence, and indicated a preference for risk-taking with best friends over cool guys. Results are discussed in terms of improving injury prevention efforts by reconceptualizing "peer pressure" as a developmentally adaptive aspect of child functioning.

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Unintentional Injury

Unintentional injuries constitute an enormous threat to the health and welfare of American children. In this country, twenty-two million children are injured every year (Boyce & Sobolewski, 1989); more than 30,000 of these injuries are permanently disabling (Rodriguez, 1990). Injury accounts for more deaths to children aged 4-18 than all other causes of death combined (Rivara & Mueller, 1987). Annually, injury leads to a serious health problem for one out of five American children (Finney, Christophersen, Friman, Kalnins, Maddux, Peterson, et al., 1993), and the annual costs of child injuries exceed \$7.5 billion (Centers for Disease Control/CDC, 1990). Other costs that are more difficult to quantify include the staggering social impact on injured children and their families (Finney, et al., 1993). Thus, prevention of unintentional injuries to children should be considered a high priority for researchers, policy makers, and society at large (CDC, 1990).

Unintentional injuries, although often seen as random and unavoidable (as the term "accident" implies), are in actuality predictable and controllable (Rivara & Mueller, 1987). However, determining effective prevention strategies requires a detailed understanding of the process of injury that transcends epidemiological data (Finney, et al., 1993). The processes that lead to unintentional injuries by children are complex and multi-deterministic; an exclusive focus on child factors ("internal determinism") or on environmental factors ("external determinism") is insufficient and overlooks the reciprocal, transactional nature of injury events (Gärling & Valsiner, 1985). Injuries result from specific behavior-environment interactions, and many if not all injuries require a failure or break-down at multiple levels of the system in which the child is permanently embedded (Finney, et al., 1993). Thus, "injuries are the product of avoidable environmental and behavioral forces that together produce an unfortunate outcome" (Peterson, Farmer, & Mori, 1987, p. 33). Whether investigation occurs at an epidemiological or individual level, injury prevention requires an integrated understanding of child motivations and behavior patterns (Jaquess & Finney, 1994), parental supervision beliefs and practices (Valsiner & Lightfoot, 1987), and structural considerations in the immediate and broader environment (Rivara & Mueller, 1987).

Sociocognitive development

Injury is a developmental and cultural phenomenon; injury risks and outcomes vary with child age and with sociocultural features of the child's environment. One piece of the injury puzzle that cannot be explicated without reference to developmental and sociocultural influences is how children function cognitively in injury-risk situations. Interpersonal relationships and cognitive functioning are intimately related; in order to understand children's risk-taking decisions, an understanding of the relational basis of cognition is a necessary prerequisite. From before birth, children are embedded inexorably in their culture; all development proceeds from within this context (Rogoff, 1990). Children are active agents in seeking the interactions necessary for their own development, and their learning is guided by shared thinking with caregivers and important others, and participation in the ongoing activities of their culture (Rogoff, 1990).

Social relationships proceed from early experiences of shared attention and co-regulation with caregivers, through the construction of shared meanings with peers in dramatic play, through negotiation of joint problem-solving requiring perspective-taking, to the establishment of intimate friendships and a peer culture based on shared expectations and interpretations (Lewis, Young, Brooks, & Michalson, 1975; Rogoff, 1990). Thus, children are always constructing their world in the context of their relationships with others. Together, people construct cultural contexts for their interactions, in which there are "standing rules for behavior appropriate to a particular socially assembled situation"--these rules vary depending on the context of the situation, but members of the same culture will generally agree on what they are (Rogoff, 1990, p. 33). This has interesting implications for the activities of child peers in those socially assembled situations that do not include adults; such situations may represent opportunities for the rules of the peer culture to be constructed and followed without the need to reconcile or subvert any conflicting rules or behavioral expectations of the adult culture. "To understand the role of peer interaction in cognitive development, it is necessary to examine situations in which children are in charge of their own activities" (Rogoff, 1990, p. 173).

Social development and injury risk in middle childhood

There is little consensus on what level of supervision is appropriate for children in middle childhood in high-risk situations (Peterson, Ewigman, & Kivlahan, 1993). Peterson and her colleagues (1993) found that in evaluating the need for supervision of 9 and 10-year-old children in neighborhoods containing common environmental hazards (e.g., creeks, busy streets), parents' responses varied widely, but that many parents indicated that it would be appropriate for children of this age to play in the neighborhood unsupervised for several hours or more. Further, this age appears to correspond to a critical shift in parental perceptions of supervision need: in children younger than age 9, parents' responses were less varied and tended toward a consensus that in a high-risk environment, children cannot be left unsupervised for more than a few minutes if at all (Peterson, et al., 1993). Others have similarly suggested that during preadolescence the range of independent behavior increases, there is a decrease in direct adult supervision, and peers take on increased importance as socialization partners (Argyle, 1985; Furman & Robbins, 1985; Hartup, 1975; Higgins & Parsons, 1985; Kassin & Pryor, 1985). It is also important to note that when in outdoor environments with opportunities for risky behavior, children behave more safely when aware of being observed by adults than when these observations are made unobtrusively (Rohtengatter, 1981). Additionally, there is evidence that 8 to 11-year-old children perceive fewer situations as hazardous and perceive situations as less hazardous than do either younger or older children (Sheehy & Chapman, 1985). In particular, they often disagree with their parents' perceptions of what risks are too great for their abilities (Christensen & Morrongiello, 1997; Morrongiello & Bradley, 1997) and frequently base their disagreement on an overly optimistic evaluation of their own competence in preventing injury to themselves (Hyson & Bollin, 1990; Peterson, 1989).

Adolescence is popularly considered to be a time when peers take over as the primary socialization source in children's lives (Argyle, 1985), and there has been ample examination of peer influences on youthful risk-taking behaviors that threaten long-term health (e.g., cigarette smoking, illegal drug use) (Brook, Whiteman, Gordon, & Brook, 1990; Quine & Stephenson, 1990). Little is known, however, about the influence of peers on risky decision-making in middle childhood. The middle school years (approximately ages 11-14) appear to be a particularly dangerous time in childhood; children in this

age group are more frequently injured, and are disproportionately represented among "accident-repeaters" (i.e., children incurring multiple injuries over time) (Boyce & Sobolewski, 1989). Further, it has been reported that many injuries to school-aged children are incurred in the presence of peers (Wilson, Baker, Teret, Shock, & Garbarino, 1991). Given the need for a proactive, forward-looking developmental approach in preventing injuries (Valsiner & Lightfoot, 1987), it is surprising that peer influence has been so little examined in elementary school children. If in fact children at this age are being allowed increased access to unsupervised activities in public space, are inclined to underestimate the level of hazard different situations present, and are shifting to an increasingly peer-oriented motivational focus, the risk of sustaining injury from a shared-risk peer activity could be especially great for preadolescent children.

Although little work has examined the influence of peers on the risk-taking behaviors of children, there is evidence that children are capable interpersonal influencers of each other in situations that do not involve risk-taking. There is ample evidence that even very young children can effectively influence one another's behavior (Haslett, 1983; Jones, 1985; Williams & Shaller, 1993). Trawick-Smith (1992) found that persuasive children can be identified before the beginning of elementary school, and tend to use markedly different strategies than less successful persuaders; the successful influencers used positive persuasive strategies like friendly demands, were generally socially skilled, and used fewer aggressive or angry strategies to induce compliance with their requests (Trawick-Smith, 1992). The number of persuasive tactics employed, and the complexity of these strategies, although not necessarily the overall success of the influence attempt, increase with age (Clark & Delia, 1976; Haslett, 1983; Piche, Rubin, & Michlin, 1978), and children's strategies for effecting interpersonal influence are sophisticated and well-developed by middle childhood (Levin & Rubin, 1983). It should be noted that most of the work in this area has focused on identifying successful persuaders and examining the persuasive techniques they use; in contrast, there is little information available on the children being persuaded, and we know very little about individual differences in "influenceability" in children.

Risk-taking in peer contexts

Recent work by Morrongiello and her colleagues suggests that the decisions of school-aged children in risk-taking situations can be influenced by

peer persuasion, especially if the relationship between the children is a primarily positive one (Christensen & Morrongiello, 1997; Morrongiello & Bradley, 1997). In their investigation of the interpersonal persuasion process in sibling dyads, Morrongiello and Bradley (1997) found that children who reported a positive relationship with their older sibling were more likely to acquiesce to persuasion attempts made by that sibling. Other examinations of the influence process in risky situations similarly suggest that the nature of the relationship between the persuader and the child being persuaded is an important factor in persuasion success. Bigelow and colleagues (1992) and Jones (1985) found that for elementary-school children, friends were more effective persuaders than were strangers or acquaintances (Bigelow, Tesson, & Lewko, 1992; Jones, 1985).

Despite this evidence, however, knowledge of the specific relationship factors that impact the influence process is limited. For example, no longitudinal studies exist that trace the development of the influence process over the course of actual relationships. Friendship is a particularly difficult relationship to define in a research context: in the studies employing "friends" as influencers (Bigelow, et al., 1992; Christensen & Morrongiello, 1997; Jones, 1985) relationships varied from school playmates with no contact outside of this setting, to stable best friend dyads. The difficulty of adequately describing and categorizing children's peer relationships, and a lack of examination of the developmental process of influence, have so far precluded the careful examination of those factors within relationships defined as friendly that may bear on the influence process within the relationship. Additionally, most studies of peer persuasion examine influence as a unidirectional process in a dyadic context--one member of the dyad attempts to persuade the second child to cede to some request or change a previously expressed opinion or decision, and the measure of influence success is the second child's acquiescence to these demands. The more complex mutual negotiation of goals and behaviors ongoing in dyadic relationships, and the influence dynamic in larger group contexts, have yet to be examined. Although close dyadic peer relationships are undoubtedly important influences on children's behavior (Bigelow, et al., 1992; Morrongiello & Bradley, 1997), there is evidence that most peer pressure situations involve small groups of children (i.e., as opposed to dyads or larger crowds) (Lewis & Lewis, 1984; Lightfoot, 1992).

Social Competence and Peer Influence

Children's activities in peer culture situations have received little attention, in part because of the difficulty adult researchers have in accessing such situations; as a result, we know little about how children behave when on their own together or how they construct their shared meanings in the absence of adult models, guides, and restrictions (Rogoff, 1990). It is important never to overlook the child's active role in constructing these environments and subjectively experienced contexts; children are purposive and goal-oriented, and their behavior in different socially assembled situations will be based on their current goals and abilities (Valsiner & Lightfoot, 1987). Children are aware of context-specific rules for appropriate social behavior (Argyle, 1985; Lewis, et al., 1975); although to adults children's peer activities may sometimes seem to be chaotic and unstructured, these activities are also governed by expectations and rules for appropriate goals and behaviors (Argyle, 1985; Kassin & Pryor, 1985). In peer-culture situations, one common goal will be to construct shared experiences and viewpoints in order to build relationships based on a group identity (Furman & Robbins, 1985; Lightfoot, 1992). This goal is congruent with the finding that popularity in middle childhood and beyond is correlated with the tendency to conform to others' demands and be cooperative--these characteristics should be desirable to peers intent on coming to a shared understanding of experience (Hartup, 1975).

Establishing a shared identity with a group of peers may be a more important goal for some children than for others. Dodge and Richard (1985) assert that children have widely differing social goals and motivations; some children consider friendship secondary to other social goals, while others value peer relationships more than their own self-protection (Dodge & Richard, 1985). Ollendick and Schmidt (1987) included this consideration in their examination of the utility of social learning constructs in predicting peer interaction patterns. Peer reinforcement value is a measure of how important peer relationships are to a child, or how much he values interactions with other children. Placing a high value on peer interactions is related to having positive peer relationships: many children who report placing heavy emphasis on peer interactions have positive relationships with their peers (Ollendick & Schmidt, 1987). Socially skilled children are thus both more likely to be peer-oriented and to achieve positive peer relationships, and children are more likely to be influenced by peers with whom they have positive relationships.

This suggests that socially competent children may be more influenced by their peers than children who are less socially skilled.

Peer pressure and risk-taking may be seen as active behavior choices that encourage the establishment of a group identity through shared risk-taking. Thus, Lightfoot (1992) describes risk-taking behavior as "a culture-creating device employed for the purpose of organizing self-other relationships" (p. 229). In Lightfoot's (1992) examination of adolescents' perception of the phenomenon of "peer pressure," adolescent subjects frequently cited the discrepancy between what parents and teachers led them to believe about the phenomenon of peer pressure and their actual experience of unsupervised risk-taking situations. There were two fundamental differences between these two conceptualizations of peer pressure: (a) the consequences of conformity or independence were not explicitly stated (as in the oft-presented "What are you, chicken?" version of peer pressure); and, (b) shared risk-taking was seen as a proactive mechanism for creating important group experiences and advancing an already essentially positive emotional relationship, rather than as an externally imposed opportunity to prove one's worth or avoid the criticism of aggressive or antagonistic peers (the latter being assumed in the educational focus on "Just Say No" and other resistance-based admonitions). If participation in peer-sanctioned risky behavior is considered a mechanism for improving and maintaining positive peer relationships, children who are more socially competent may be more likely to engage in these behaviors: socially competent children are more likely to have positive peer relationships (in which the influence valence is likely to be stronger), to determine accurately the social context demands of peer situations, and to act cooperatively in order to competently establish a shared perspective with their peers.

Asserting that peer influence on risk-taking is positively related to social competence is incongruent with common conceptions of "peer pressure." However, in order for adult efforts to reduce injuries associated with peer-sanctioned risk-taking to succeed, a better understanding of the social motivations that underlie risky behavior is required. If socially competent children are more likely to be influenced to take risks when with their peers, programs that target such risky behavior must incorporate behaviors that will accomplish peer socialization goals currently being met by group risk-taking behaviors. Many peer-pressure programs focus on increasing children's social skills in order to protect them from peer bids for dangerous behavior.

This implies that it is a lack of social competence that encourages peer-sanctioned risk-taking. In contrast to this focus on vulnerability, our conceptualization of peer pressure asserts that to be influenced by one's peers is not a sign of social incompetence or relationship problems in middle childhood, but the opposite. A positive relationship between social competence and peer influence is congruent with the conceptualization of "peer pressure" and shared risky behavior as active, effective behavioral choices made by competent children intent on establishing and maintaining positive peer relationships.

Peer Context, Risk-taking, and Social Competence

Based on the considerations presented above, the current study was designed to investigate pre-adolescent children's decisions to engage in shared risky behavior based on the presence of an established peer group (i.e., "some of your best friends"), a new, desirable peer group (i.e., "some cool guys at school who aren't your close friends yet but you want them to like you"), or a disliked peer group ("some kids you don't like to play with"). The risk-taking situations used as stimuli in this investigation were derived based on information about the types of serious injuries most common in middle childhood. Pedestrian-related injuries, drowning, burns, firearm injuries, and falls are all among the top ten causes of fatal injuries in children aged 5-14 (Finney, et al., 1993); thus, scenarios that represent the potential for these types of injuries were included in the development of the risk-taking measure designed for this study. Using responses to these risk-taking scenarios and considering relationship quality, peer orientation, parent-reported social competence, and sociodemographic variables, this study (a) examined pre-adolescent children's socially contextual decisions to engage in shared risky behavior; (b) identified predictors of peer influence; and, (c) compared peer influence patterns in children with high and low social competence.

Gender differences

There is substantial evidence that important gender differences exist in peer relationships, injury risk, and other variables related to the present study. Boys are more likely to incur an unintentional injury than are girls (Scheidt, Harel, Trumble, Jones, Overpeck, & Bijur, 1995). In their evaluation of parents' supervision beliefs, Peterson and her associates (1993) did not solicit separate parental responses for male and female children, but evidence from

other sources suggests that parents may grant boys a greater territorial range in outdoor play than they do girls (Bjørklid, 1985; Hart, 1979). In terms of peer interaction patterns, boys are more likely than girls to have a group of friends who act as companions in shared activities, while girls tend to have fewer, more intimate friends and prefer dyadic interaction over larger group activities (Argyle, 1985). Both sexes, however, exhibit same-sex friendships almost exclusively during preadolescence (Argyle, 1985). Others have found that boys are more likely than girls to perform behaviors that put them at risk for unintentional injury, and that this gender difference increases with increasing risk (Ginsberg & Miller, 1982). Similarly, Morrongiello and her colleagues found that school-aged boys are more likely than their female counterparts to endorse behaving in risky activities (Christensen & Morrongiello, 1997; Morrongiello & Bradley, 1997). Lewis and Lewis (1984) found that males are much more likely than females to encounter peer pressure surrounding activities that put them at risk for immediate physical injury. They also found that same-sex peer pressure is the norm for boys, while opposite-sex peer pressure was more common for girls (i.e., both boys and girls were more likely to be dared to perform risky behaviors by boys). Because of these important differences, the scenarios measure employed in the study is appropriate for examining boys' risk-taking but not girls'; it is on this basis that the current investigation was limited to male subjects.

Hypotheses

It was hypothesized that overall children would report greatest risk-taking with their best friends, less with cool guys, even less alone, and least with disliked kids. In other words, children were hypothesized to perform more risky behaviors with their best friends than alone and with cool guys than alone, to show a preference for risk-taking with best friends over cool guys, and to perform fewer risky behaviors with disliked kids than alone. It was further hypothesized that friendship satisfaction, peer reinforcement value, and indices of social competency would significantly predict general peer influence, with all 3 variables being positively related to peer influence. Additionally, it was hypothesized that highly socially competent children would show a larger effect of best friends on risk-taking than their less socially competent peers, and that they would show a larger preference for risky behavior with best friends over cool guys. Less socially competent children were expected to show smaller influence effects by positive peers (best friends

and cool guys), and to show a smaller decrease in risk-taking with disliked kids relative to their more socially competent peers.

Method

Subjects

Subjects were 56 boys, aged 8-10 years, recruited through local public schools, community youth groups, and churches. Flyers advertising the research study were distributed to parents through agencies in Montgomery County; all 8-10-year-old boys whose parents expressed interest in the study were invited to participate. No exclusionary criteria other than age and sex were used. Fifteen subjects were excluded from analysis because of high social desirability scores (>17), leaving 41 subjects in the analyzed sample.

Measures

Measures Completed by Parents

Sociodemographic information. This form requested basic sociodemographic information about the child and family, including the name, age, gender, and relationship to the subject of each member of the household, how long the family had lived in the community, marital status of parents, family income (from a choice of income ranges), and parents' education and occupation. This information was used to describe the sample; some sociodemographic variables were also included in the regression analyses to identify predictors of peer influence.

Child Behavior Checklist. Achenbach's Child Behavior Checklist (CBCL) lists 112 brief descriptions of behavioral and emotional problems; parents indicate whether each statement is "Not True," "Somewhat or Sometimes True," or "Very True or Often True" of their child. Additional items assess the child's participation and competence in sports, hobbies, jobs and chores, and activities with friends, as well as the child's ability to get along with parents, siblings, and other children, and his academic performance. Scores contribute to several subscales (e.g., Social Problems, Attention Problems, Depression/Anxiety); clinically significant scores are based on deviations from published norms. This parent-report form has been used extensively in research; information is available on validity, reliability, normative sample characteristics, and the relationship of scale scores to other indices of child adjustment (Achenbach & Edelbrock, 1983).

For this study, T-scores for the Social Competency scale and the Social Problems scale were used. The Social Problems Scale is one of 8 clinical scales on the CBCL; it is comprised of 8 items: 1. Acts too young for his/her age; 2. Clings to adults or too dependent; 3. Doesn't get along well with others; 4. Gets teased a lot; 5. Not liked by other kids; 6. Overweight; 7. Clumsy or poorly coordinated; and 8. Prefers younger children. T-scores for this scale range from 50-100, with scores over 70 considered in the clinical range. The Social Competence Scale, one of three CBCL Parent-Reported Competence Scales, is comprised of 3 ratings: 1. The number of organizations to which the child belongs and the mean level of participation in those organizations; 2. the number of close friends (excluding siblings) the child has and the frequency of contact with friends outside of school hours; and, 3. how well the child gets along with others and how well he plays or works alone (worse than, as well as, or better than other kids). T-scores for this scale range from 18-55, with higher scores indicative of better social competence and scores under 30 considered indicative of clinically significant social incompetence.

Child's injury history. Parents completed an injury history parental report form describing any major or minor injuries sustained by their child in the last year, as well as medically attended injuries sustained in the child's lifetime.

Measures Administered to Children:

Friendship relationship quality. The Inventory of Peer Attachment (IPA) was administered (Armsden & Greenberg, 1987). The IPA is a self-report questionnaire comprised of 25 Likert-scale items that assess the subjective quality of the child's close friendships. Children indicate their level of agreement with items such as "My friends listen to what I have to say," "My friends are good friends," and "I wish I had different friends" (reverse scored). Scores for each item range from 1-5, with items indicating dissatisfaction being reverse scored before item summation to yield a total score. Total scores for the measure range from 25-125. Higher scores indicate a greater degree of friendship satisfaction, or better relationship quality. The IPA has a reported three-week test-retest reliability of .86 (Fischer & Corcoran, 1994).

Peer orientation. Evers-Pasquale's Peer Preference Test (PPT) was administered (Evers-Pasquale, 1978). The PPT is a 15-item self-report questionnaire that asks children to indicate whether they would prefer to engage in each of 15 activities with another child, an adult, or alone. Adequate

validity and reliability have been reported for the test with preschoolers. Although the original PPT was designed for use with pre-schoolers, all but three items are appropriate for school-aged children; the three inappropriate items were removed from the measure in order to make the scale suitable for children of elementary-school age. This school-age version has been employed in previous research with subjects in middle childhood (Bennett, 1982; Ollendick & Schmidt, 1987); however, reliability and validity in this age group are unknown. On the revised 12-item measure, scores range from 0-12 (one point for each item for which "with peer" was the chosen response), with higher scores indicating greater preference for engaging in peer activities, or stronger peer orientation.

Relationships interview. Children completed a brief interview about their peer relationships (see Appendix A). Specifically, they listened to a brief descriptive definition of a "best friend" and were asked to name their three best same-sex (male) friends, give their ages, and report how long they had known each one. The same procedure was followed for the desired-peers (cool guys) relationship, and for disliked peers. These discussions were intended to orient the subjects to the scenarios measure they preceded and to act as a manipulation check to ensure that children made the distinctions between different relationships necessary for the scenarios to be meaningful; the nominations were not used as data.

Risky behavior in social context. The scenarios measure, developed for use in this study, presents children with verbal descriptions of 12 risk-taking situations that could lead to types of serious injury most common in middle childhood. For each scenario, children were asked to indicate on a 4-point scale how likely they would be to engage in the risky behavior (e.g., swimming unsupervised; playing with matches) under four social context conditions: in the presence of an established positive peer group (best friends); with a new, desirable peer group (cool guys); with a negative peer group (disliked kids); and alone. Responses for each item range from 1-4 (1 = No; 2 = Probably No; 3 = Probably Yes; 4 = Yes), so total scores for the 12-item scale range from 12-48; the mean for each scale was obtained by summing responses to the 12 items in each condition and dividing by 12. Each subject contributed four mean scores, one for each of the social context conditions (best friends, cool guys, disliked kids, alone). Higher scores are indicative of higher reported risk-taking. The final version of the risk-taking scenarios measure employed in the study is provided in Appendix B.

Honest reporting of risky behavior. The Young Children's Social Desirability Scale (YCSD), a 14-item forced-choice self-report measure, was administered. Items assess the child's tendency to display a socially desirable response set, i.e., to reply dishonestly to questions about socially desirable behavior. Representative items include: "Do you *sometimes* shout when you feel angry? OR Do you *never shout* when you feel angry?" and "Do you *sometimes* tell a little *lie*? OR Do you *never* tell a little *lie*?" Scores range from 0-28, with higher scores indicative of more socially desirable responding (Ford & Rubin, 1970). Normative data are available. For school-aged boys, internal consistency (Kuder-Richardson) has been reported as .83, and five-week test-retest reliability as .58 (Fischer & Corcoran, 1994). This measure was included in order to provide some indication of the degree of veracity in children's reports on the scenarios measure; high scores on the YCSD call into question the accuracy of children's reports of risk-taking (a socially undesirable behavior).

For this study, scores more than one standard deviation above the sample mean were considered high. The mean YCSD score for this sample was 10.8 (sd = 6.1). Fifteen subjects had YCSD scores >17, indicating that they chose the socially desirable response in at least 9 of the 14 YCSD items; the data from these subjects were excluded from analysis. These 15 subjects were found to be no different sociodemographically from the remainder of the sample. Similarly, the children with high social desirability scores did not differ from the remainder of the sample on any of other parent-reported variables (e.g., CBCL), nor did they differ on the PPT. However, the high social desirability group reported somewhat higher friendship satisfaction: the mean IPA score for this group was 95.5 (sd = 14.8), whereas the mean for the remainder of the sample was 92.3 (sd = 15.6), a significant but not substantial difference ($p < .05$). The most important differences between these two groups were in terms of the observed correlations between friendship satisfaction, peer reinforcement value, and outcome variables from the scenarios measure. Selected correlations (based on the study's hypotheses) were run separately for the two groups; information on these comparisons is provided in Table 1.

Procedure

Administration was completed in one session lasting approximately 60-90 minutes, at a time and place mutually convenient to the parent and researcher. At the beginning of the session, written parental consent and child

assent were obtained. After consent was granted, the parent completed questionnaires, while administration of child measures was conducted individually by the experimenter. Initially, children spent about fifteen minutes being interviewed about different types of peer relationships. They then completed the self-report questionnaires of friendship satisfaction and peer reinforcement value; these were followed by administration of the scenarios measure. Last of all, children completed a self-report of socially desirable responding. All child measures were read to the children by the experimenter. At the end of the session, children were given small participation incentives (e.g., pencils, baseball cards), and both parents and children were given an opportunity to discuss the experiment and to ask questions.

Data Analyses

Risk-taking Scenarios

SPSS for Macintosh (SPSS, Inc., 1994) was used for all data analyses except where indicated. In all analyses, $p < .05$ was required for significance. Mean differences in risk-taking for the four social context conditions were tested for significance overall via one-way repeated measures ANOVA. Pair-wise planned comparisons between the alone condition and the three peer conditions (best friends, BA; cool guys, CA; and disliked kids, DA), as well as between the best friends and cool guys conditions (BC), were tested for significance using the paired-samples t-test procedure. These comparisons were conducted in order to identify the presence of particular peer influence effects in the reported risk-taking of the participants. All 41 subjects contributed to these analyses.

Predictors of Peer Influence

Explanation of the variance in the broadest peer influence effect (general peer influence, i.e., the summed absolute values of the other peer influence effects to produce an index of peer influence irrespective of the emotional valence of the relationship or the direction of influence) was undertaken via a multiple linear regression, forward-selection procedure (entry significance criterion .10; removal .05). Initially, continuous and categorical variables were considered separately. Continuous variables were selected for inclusion in the forward analysis via iterative backward analyses (entry significance criterion .25; removal .15). In each iteration, the variance inflation factors (VIF) were examined, and the variable with the highest VIF was discarded. This

procedure was continued until all remaining variables had $VIF < 10$. Intercorrelations for all dichotomous categorical variables were examined; where correlation coefficients were $> .40$, the variable in the correlated set that was most highly correlated with the outcome variable (general influence) was retained. The remaining 18 variables (13 continuous and 5 dichotomous categorical) were then entered using the forward-selection procedure described above. Although 18 is a large number of variables to test on a sample of this size, the data were judged to be robust enough to support this type of analysis, and at this level of examination (with little known regarding predictors of peer influence on risk-taking behavior) we were reluctant to exclude variables which the data indicated might have explanatory value. The final reported model contained only variables with t-values with a significance value of less than .05. Regression analyses were performed using SAS-PC. Results for one subject were not included in the regression analyses because of missing parent data (N=40).

Social Competence Group Comparisons

In order to examine the relationship between social competence and directional peer influence patterns, the sample was divided into two groups based on a median split of a composite peer social competence score (comprised of three indices of peer relationship functioning, i.e., the Inventory of Peer Attachment, the CBCL Social Competence Scale, and the CBCL Social Problems Scale). Composite scores could range from -57 (lowest possible scores on IPA and CBCL Social Competence, minus highest possible score on CBCL Social Problems) to 130 (highest possible score on IPA and CBCL Social Competence, minus lowest possible score on CBCL Social Problems).

A mixed-model repeated-measures ANOVA was conducted with peer context (alone, best friends, cool guys, disliked kids) as a within-subjects factor and social competence (high or low) as a between-subjects factor. Independent-samples t-tests were performed to specify the source of the significant differences indicated by the ANOVA results, i.e., to identify in which peer contexts children reported different levels of risk-taking in the two social competence groups. Social competency group comparisons for peer influence effects were tested with independent-samples t-tests. In all cases, planned comparisons were based on the identification of particular peer influence effects as outlined above for the sample as a whole. Additional analyses to explicate the relationship between social competence and the influence of cool guys on risk-taking were performed by dividing the sample into four social

competence groups (quartiles); this analysis was tested for significance via the same method described for the dichotomized sample. Results for one subject were not included in the social competency analyses due to missing parent data, and results for an additional subject were excluded due to incomplete CBCL Social Competency data (N=39).

Results

Description of Sample

The analyzed sample was comprised of 41 children ranging in age from 8-10 years (mean = 9.2 years, sd = .90), 81% of whom were white. The majority of the sample attended public school, and lived in two-parent households. Parents tended to be well-educated, and economically upper-middle class. A sizable number of the mothers in the sample described themselves as homemakers (24.4%). Most parents employed outside the home worked in professional positions (e.g., physician, attorney) or as educators. Sociodemographic summary statistics for the sample are provided in Table 2. Descriptive statistics for other variables are provided in Table 3.

Risk-taking Scenarios

Summary statistics for individual scenarios items are provided in Tables 4 and 5. Of the twelve scenarios, two showed very low variability (riding a bike without a helmet and playing with a found gun). Despite similarly low variability in pilot testing, these items were retained in the final measure because of the lethality of these types of injuries in middle childhood. The results reported here include these items; when removed from the analyses, the results do not differ in any way that would encourage misinterpretation of the results. That is, because of low peer influence on these two scenarios, they reduced the level of peer influence found for the measure as a whole. When these scenarios were excluded from analysis, the peer influence effects for the remaining ten scenarios are somewhat higher than the means when these low-influence scenarios are included. However, because the results for the 12-item measure were sufficiently strong, all 12 items were retained in order to permit interpretation of the results for the two low-variability items (since these represent serious sources of injury to school-aged children).

The Total score for the scenarios measure was obtained by summing scores (1-4) for 12 risk-taking scenarios in each peer context condition (alone, with best friends, with cool guys, and with disliked kids), then dividing the

total by 12 to obtain the mean for each condition for each subject (the subject mean). The means of the subject means were then obtained to produce an average risk-taking score for each condition, the sample means reported in Table 6. The sample overall reported low rates of risk-taking behavior across conditions, with mean responses ranging from 1.27 to 2.33 across the four conditions. The lowest condition mean of 1.27 (disliked kids) represents an average response between "No" and "Probably No," while the highest condition mean of 2.33 (best friends) represents a mean response between "Probably No" and "Probably Yes." However, as can be seen by the range of scores and the standard deviation of the distributions, there was considerable variability in reported risk-taking across children. Although this sample overall indicated that they would be unlikely to engage in dangerous behaviors, the children certainly did not indicate uniform surety that they would not take these risks--from an injury-prevention stand-point, any response to these scenarios other than a definitive "no" represents an important source of behavioral injury risk. Additionally, despite a limited response metric (1-4 for each condition) and small sample size, the numeric differences between the condition means were all statistically significant (see planned comparisons in Table 6), indicating that average reported risk-taking was different in each of the four contexts.

Peer Influence Effects

In order to examine peer influence on reported risk-taking behavior, it is insufficient to consider risk-taking only in the presence of peers. That is, some children may endorse high levels of risk-taking with their best friends but *also* endorse high risk-taking when these friends are not present--although these high risk-takers may be a source of concern, they cannot be said to be influenced by the presence of their friends in risk-taking situations. However, children who report high levels of risk-taking in the presence of their friends but low risk-taking when their friends are not present may be said to be influenced by these friends in risk-taking situations. Both these types of responses would contribute to a higher observed sample mean for the best friends condition--thus, examining the best friends condition alone would not allow for the differential influence of best friends on the reported risk-taking of these two children to be revealed. High risk-taking in the best friends condition only denotes peer influence if it is high relative to the level of risk-taking reported in the alone condition.

By testing differences between the condition means for significance (Table 6), we were testing whether or not particular types of peer influence exerted themselves on the reported behavior of the participants. The results of these analyses indicate that on average the sample reported different levels of risk-taking in all four conditions, with highest risk-taking reported in the best friends condition, next highest in the cool guys condition, less in the alone condition, and least of all in the disliked kids condition. In other words, both types of "positive" peers increased risk-taking, while disliked kids decreased risk-taking. Additionally, children reported a preference for risk-taking with best friends over cool guys, as indicated by the larger increase in risk-taking in the best friends condition than in the cool guys condition.

These comparisons can be thought of as "peer influence effects." For example, the difference between the sample means for the best friends condition and the alone condition can be described as the average influence of best friends on reported risk-taking for this sample, or the average "best friends effect" for the sample. In this case, the effect could be quantified by subtracting the sample mean for the alone condition from the sample mean for the best friends condition. However, the same mean "best friends effect" could be produced by subtracting the appropriate condition means for each subject (to calculate an average "best friends effect" for each subject) and then obtaining the sample mean of the subject means. Consideration of the best friends effect for each individual subject allows for closer examination of variations in this type of peer influence within the sample. Descriptive statistics for the best friends effect, as well as for other peer influence effects (calculated similarly for the influence of cool guys and disliked kids) are presented in Table 7.

The best friends effect (B-A), the cool guys effect (C-A), and the disliked kids effect (D-A) represent the influence of these peer contexts on the child's reported risk-taking behavior by using the child's mean score in the alone condition as a baseline against which to consider his scores in the three social context conditions. The term "positive peer preference" refers to the mean score in the cool guys condition subtracted from the mean score in the best friends condition, to yield a measure of the child's preference for best friends over cool guys. These effects (BA, CA, DA, and BC) correspond to the planned comparisons presented in Table 6 that were employed to test the significance of the differences between condition means (the analyses that indicated that these peer influence effects were present in the sample). In addition to descriptive statistics for these effects, Table 7 presents descriptives for the "general

influence" effect, which is derived from summing the absolute values of the other peer influence effects to yield an indication of the level of peer influence overall, irrespective of the emotional valence of the relationship or the direction of influence (i.e., toward more or less risk-taking).

In general, these boys were more likely to endorse taking risks when with their best friends or cool guys than when alone, showed a preference for best friends over cool guys, and were less likely to take risks with disliked children than by themselves. However, as indicated by the minimum and maximum values for each effect, there was considerable variability in these effects across subjects, suggesting that patterns of social influence in peer contexts are not uniform. In fact, while many children responded in the manner suggested by the means reported above, some children displayed very different patterns of social influence. Explicating the variance in the broadest of the reported effects, general influence, was undertaken via multiple regression analysis.

Predictors of Peer Influence

The parameters employed for conducting the multiple regression analysis to determine predictors of general peer influence are provided in Table 8. The cross-correlation matrix for the variables included in the regression analyses is provided in Table 9. The final model, as reported in Table 10, included four variables that together accounted for 77% of the variance in general peer influence. Contributors to greater effect of peer context on risk-taking (general influence) included: (a) stronger peer orientation (PPT); (b) higher T-scores on the CBCL Social Problems Scale; (c) mother's unmarried status; and (d) more positive friendship relationships (IPA).

Social Competence and Peer Influence Effects

Social competence composite scores ranged from 31-118 (Mean = 87.3, sd = 22.5). A median split resulted in two groups, one (n = 20) with social competence composite scores < 91 (Mean = 70.6, sd = 18.7) and the other (n= 19) with social competence composite scores > 90 (Mean = 104.8, sd = 8.1). The groups were not different in terms of child age. Analyses to compare socially contextual risk-taking in these two social functioning groups are presented in Table 11.

The results of the mixed-design repeated-measures ANOVA (Table 11) indicate that while risk-taking overall (across all conditions) did not vary across the two levels of social competence (i.e., there is no main effect for social competence group), risk-taking did vary by peer context for the sample overall (as indicated by the previous ANOVA presented in Table 6, and reiterated here as a significant main effect for Context). The significant interaction between social competence and context indicates that risk-taking in some contexts varied across levels of social competence. Of the planned comparisons (A-A, B-B, C-C, D-D), mean risk-taking for the two social competence groups was significantly different in the best friends and disliked kids conditions, but not in the alone or cool guys conditions. This finding indicates that only those peer context effects involving the best friends condition (i.e., BA and BC) and the disliked kids condition (i.e., DA) could have varied between the social competence groups.

An examination of the peer influence effects compared across social functioning groups indicates that there was much greater variability in the effect of cool guys for children with higher social functioning, and much lower variability for the disliked kids effect for these higher-social-functioning children. Put another way, the unequal variances in these effects across groups, as well as low power due to small group sizes, prevents us from determining if there was any difference between children of higher and lower social competency in the effect that cool guys and disliked kids had on their reported risk-taking behavior. Because the mean risk-taking scores in the cool guys condition were not significantly different between the groups and neither were the Alone condition means, the finding that the cool guys effect (CA) was not significantly different for the two groups was expected. However, although the children in the high social competence group reported significantly less risk-taking in the disliked kids condition than did their lower-social-competence peers, and the groups were not significantly different in the Alone condition, the peer influence effect for Disliked Kids (i.e., DA) was not significantly different for the two groups. This is due to the small magnitude of the difference in the disliked condition coupled with the fact that although not statistically significantly different, the mean for the high group in the alone condition is numerically higher than the corresponding mean for the low group--this combination is sufficient, along with the wide variability in both DA effect distributions, to prevent the difference in DA effect between social competence groups from reaching significance.

Variations in the effects of cool guys and disliked kids do not appear to be explained by variations in social competence as it was measured here--and it is important to note that methodologically the best friends relationship was better identified in the social competence measure than the cool guys and disliked kids relationships (the social competence composite includes one measure devoted entirely to the quality of the child's best friendships). More sensitive measurements of social functioning and social competence, as well as larger sample sizes, could help elucidate the relationship between social competence and the influence of various types of peers on risk-taking behavior.

The effects involving the influence of best friends, however, clearly indicate that children with higher social competence were more influenced toward risk-taking by their best friends than were children with lower social competence. These socially competent children were reported by their parents to be active and socially accepted and to have no peer relationship problems, and they reported themselves to be more satisfied with their best friends. In the scenarios presented here, these socially competent boys reported that they would be more influenced toward risky behavior with their best friends than would children in the lower social competency group. Best friends influence by group is presented in Figure 1. Additionally, the more socially competent children showed a larger preference for best friends over cool guys than did the less socially competent children (for whom best friends and cool guys were equal influences). Preference for Best Friends over Cool Guys by group is depicted in Figure 2.

It is important to note that the source of these differences is in the level of risk-taking reported with the best friends--highly socially competent children were not more likely to report taking risks alone or with cool guys than were less socially competent children, but the socially competent boys reported substantially more risk-taking with their best friends than did the children in the lower social competence group . While children in the lower social competence group reported a shift from a mean of 1.70 in the alone condition to 1.92 in the best friends condition (remaining within the range between "no" and "probably no"), the high social competence boys reported a shift from a mean of 1.81 in the alone condition (between "no" and "probably no") to a mean of 2.61 in the best friends condition (between "probably no" and "probably yes"), indicating a critical shift in decision-making to the point where the child considered himself as likely as not to perform behaviors that could place him in serious physical jeopardy.

In order to more closely examine the relationship between social competence and the influence of cool guys on risk-taking, the sample was divided into four social competence groups (using a quartile split of the social competence composite score distribution). The results for this analysis are presented in Table 12. Although because of small group sizes these differences did not reach significance, it appears that the effect of cool guys on risk-taking may have a curvilinear relationship with social competence, with children with either very high or very low social competence reporting increased influence of these desirable peers relative to the responses of children with moderate social competence.

Discussion

When considered overall, our results indicate that boys in middle childhood reported more risky behavior in positive peer group situations than when they were alone. Further, these boys reported that they generally were less likely to engage in risky activities with children whom they disliked than they were by themselves. Two interpretations are possible; both concern the motivation of the boys for performing these behaviors. It could be that risk-taking behaviors in particular are influenced by peer context. However, it could be that these children would generally prefer to participate in activities with their friends than by themselves regardless of the riskiness of the behavior. Some support for this latter interpretation can be found in the peer orientation scores for the sample; on the PPT measure, many children endorsed a preference for participating in non-risky activities with their peers. However, many of the alone condition scores for the scenarios measure indicate that the children were unlikely to participate in the risky activities described without their peers. This could be because the activities sounded unattractive without their friends, or it could be that the children chose not to perform these behaviors alone because the risk involved was considered too great without the opportunity to obtain peer socialization benefits.

Although we did not solicit ratings of how risky the children perceived these activities to be, they are objectively risky behaviors that result in numerous serious injuries to children in this age group every year. In order for these findings to be considered meaningful, it is not critical that these risky behaviors be any more prone to peer influence than non-risky behaviors--whether a child also would be more likely to do puzzles or play computer games with his friends than by himself does not diminish the significance of

peer influence on his dangerous behavior. However, it will be useful in future research to determine whether children perform risky behaviors in particular in order to achieve peer socialization goals (such as group identification). From previous research and these results, it seems plausible that boys in middle childhood take risks with their friends because doing so cements shared perspectives and other relationship variables critical for sociocognitive development. However, it is unknown whether it is taking physical risks specifically that accomplishes this goal, or if in fact many less risky group activities could serve the same purpose if made readily available. Nonetheless, when opportunities to meet these goals via shared risk-taking experiences present themselves, many boys who reported that they would be unlikely to take such risks alone indicated that they would perform the same dangerous behaviors with their friends. Determining what types of alternative group activities could equally meet the peer socialization goals driving shared dangerous behavior, and providing children with access to these activities, could be one strategy for reducing behaviors that place children at risk for unintentional injury.

The largest general influence scores were obtained by children who indicated large increases in risk-taking with positive peers (best friends, cool guys) and large decreases in risk-taking with negative peers (disliked kids). The smallest scores were obtained by children who reported risk-taking behavior at similar levels regardless of peer context. As a measure of how well the child distinguished between various peer contexts (i.e., how sophisticated his discriminations were of cultural expectations in socially assembled peer situations), the general influence variable was predicted to be associated with indices of social competence, greater peer orientation, and higher friendship satisfaction. As predicted, our regression results indicate that more highly peer-oriented children were more influenced by their peers in risk-taking situations, making greater distinctions between positive and negative peers and adjusting their risk-taking behavior according to peer social demands. The risk-taking of children with greater friendship satisfaction, as predicted, was more influenced by peer context. This is congruent with previous findings that have suggested that children are more influenced to take risks by children with whom they have positive relationships. However, our findings also indicate that children with satisfying friendships made greater distinctions between positive peers (who increased risk-taking), and negative peers (who decreased risk-taking).

Although we made no predictions regarding sociodemographic variables as predictors of general influence, mother's marital status contributed to our regression model. The mothers of only five children reported themselves to be unmarried (3 divorced, 1 widowed, 1 never married), but unmarried maternal status did contribute to higher peer influence. Variables often linked with unmarried status (low education, minority status, younger age, more frequent residence changes, poverty) that could be related conceptually to peer influence were absent or poorly represented in this sample. It could be that the relationship between marital status and peer influence observed here is better understood by considering the lesser peer influence for children of married mothers in this sample. A relatively large number of the married mothers in this sample identified themselves as homemakers (as did 4 married fathers). It could be that very high levels of parental involvement and supervision in these families--particularly in combination with low friendship satisfaction and/or peer orientation--reduce the level of peer influence in some children. However, because we made no *a priori* predictions regarding this variable (and given the lack of representation of unmarried parents in the sample), it is important to consider any interpretation of this variable to be highly conjectural. Further research with broader samples and *a priori* predictions will be required before drawing conclusions regarding the relationship between parental marital status and peer influence on risk-taking behaviors.

The variable Social Problems contributed to our predictive model in the direction opposite of that hypothesized: children with higher scores on this measure of social impairment were more highly peer-influenced. None of the children in this sample had CBCL Social Problems Scale T-scores in the clinical range (>70), and almost 75% of the sample had the lowest possible score (T=50). The differences between low and high scorers within this sample could best be interpreted as children with no social problems and children with minimal or sub-clinical social problems. This result may suggest that the risky behavior of children with even minor social problems may be more influenced by peers, when these minor social problems occur in conjunction with the other predictors in the model. Children with even mildly elevated scores on this scale may experience greater rejection and social failure despite other indices of high social functioning (e.g., IPA scores), rendering them more sensitive to peer influences. However, for the children in this sample the CBCL Social Problems scale alone does not provide an adequate index of social

competence. Although the CBCL scale is likely to identify children with serious social problems, it is not meant to distinguish between adequate and excellent functioning, or to be relied upon as a sole measure of social competence in children without clinical problems. Additionally, because two other predictors in the model (IPA and PPT) are both associated with better social functioning (implying that the children who were more influenced in the regression model had higher social competence), the opposite relationship of this variable makes interpretation of its contribution difficult. To examine more specific, directional influences on peer-sanctioned risk-taking, we approached the issue of social competency in this sample by grouping the sample according to scores on a composite of three indices of social functioning.

Comparisons of groups with "high" and "low" social functioning indicated that children with lower social functioning were less influenced to take risks with their best friends than were children with higher social functioning. 55% of the low social functioning group had negative or non-existent BA (influence of best friends) effects, while this was true for only 16% of the high social functioning group. Similarly, only 10% of the low social functioning group had BA effects of .60 or greater, whereas 74% of the high social functioning group showed this level of influence. Interestingly, the CA effect (influence of cool guys) did not differ for the two groups--the additional analyses performed on the quartiled sample suggest that the influence of cool guys may be parabolic, with children with high and low social functioning displaying increased risk-taking and children in moderate social-functioning groups displaying no influence. Unfortunately, because of small N sizes for these four groups, none of the observed differences reached significance, so the relationship between social competence and the influence of desirable but unestablished peers will need to remain to be clarified in future research. However, the relationship suggested here is theoretically plausible. Socially incompetent children could be attracted to risk-taking with cool guys because of low peer popularity or status and less fulfilling relationships with established friends, while children with very high social competence could have been conceptualizing the cool guys construct somewhat differently than originally intended. That is, many of the children in this highest social group were likely to *be* cool guys themselves, and to have as their close friends the children whom other less popular children might think of as cool guys. When asked to picture cool guys, these most socially competent children might be

less able to make a clear distinction between cool guys and best friends, if in fact for them these two types of social group were comprised of the same or similar individuals. In general, however, our results indicate that more socially competent children vary their risk-taking behavior to a greater extent across social contexts than do less socially competent children, suggesting that these children are making more highly differentiated distinctions between the contextual demands regarding risk-taking behavior that present themselves in various peer situations.

When considering these results, it is important to note that the peer influence scores for most subjects included variability across scenarios. In two scenarios, many children reported that they would not engage in the dangerous behaviors regardless of peer context, resulting in very low peer influence on these risk-taking decisions. For these particular high-risk behaviors, peer context made no difference: regardless of who was encouraging it, these children indicated they were unlikely to ride their bike without a helmet or to play with a gun. It is possible that due to local school and community prevention efforts aimed at these particular risks (e.g., bike helmet education), children's risk-benefit assessment has changed, possibly by encouraging awareness of the risks involved.

Although not systematically assessed, many of the children made spontaneous comments during the scenarios administration, and these comments were frequently noted by the administrator. Many children referred to the bike helmet scenario as unrealistic, because their friends would never encourage them to ride without a helmet. Several children commented that if they ever did ride without a helmet, their friends would pressure them to put the helmet on. It is unknown by what mechanism the peer socialization valence for this particular risky behavior became negative (or the protective behavior positive), but for these children riding a bike without a helmet was not perceived as socially desirable.

The gun item functioned somewhat differently, with most participant comments referring to the extreme lethality of the risky behavior. Some children indicated that they might encounter such a situation (unlike the bike helmet scenario) but that if they did they would never submit to peer pressure because the activity was too dangerous. It is an accurate perception on the part of these children that the gun scenario represents a much more dangerous opportunity than many of the other scenarios, and in this sample 54% of children reported themselves to be immune to peer pressure to play with a

gun. This scenario was anticipated to be especially vulnerable to sample effects; because of the sociodemographic distribution of the sample, it was anticipated that many of these children would not have access to guns and likely would have been warned against them. Unfortunately, however, 15% of the sample indicated "probably yes" or "yes" in at least one condition of the gun scenario. Given the wide variability in gun attitudes and behaviors in our pluralistic society, it seems likely that children from sociocultural environments other than those represented here could be even more vulnerable to the temptation to play with a gun.

This study bears a number of important limitations. First, we measured children's reports of what they would do in hypothetical situations. It is unknown to what extent their reports would be congruent with their behavior in the real world. We endeavored to minimize the effects of socially motivated under-reporting of risky behaviors by excluding the results of children with highly socially desirable responding. However, social desirability is only one threat to the ecological validity of these reports. Conclusions regarding peer influence on children's risky behavior could be strengthened by observing overt behaviors in analog or (even better) naturalistic settings.

Second, our sample was constricted in many respects: it was small, excluded girls, and was comprised almost entirely of white, upper-middle-class children from well-educated two-parent families living in a suburban college setting. Obviously, our results may not be applicable to children from other sociocultural backgrounds. In order to broaden the applicability of these findings, future investigations should include children from other socioeconomic, cultural, and geographic strata. Additionally, peer influence on girls remains under-investigated. Sample variability also was limited on measures of social functioning. Although our results indicate that variations in social competence are related to peer influence even within a relatively high-functioning sample, conclusions concerning the effects of serious social impairment on children's peer-sanctioned risk-taking must await future investigations that include children with clinically significant social problems.

Third, it is unclear to what extent peer influence in risky situations is related to peer influence on other behaviors, and whether physical risk-taking in particular is in any way special either in terms of peer influence or the motivational processes theorized to underlie this influence (e.g., building a shared group identity). In order to create sophisticated preventive interventions, it will be important for future investigations to attempt to

compare behaviors and motivational processes in group situations that vary in terms of the level of injury risk they present.

Last, the scenarios measure employed here was created for this study. As a new instrument, it could clearly be improved upon. For one thing, although we did not wish to confound our results by soliciting subjects' risk ratings for the scenarios (thereby potentially affecting subject reports by increasing awareness of the perceived riskiness of these behaviors by adults), it would be useful in the future to use a separate sample to obtain ratings of these scenarios in terms of level of risk and level of fun or enjoyment. Similarly, ratings of how important the children felt it was to take the risk, or reports from them of the perceived consequences of their chosen decision, would provide important information regarding how the scenarios are processed by the children. Additionally, our adult attempts to define childhood peer relationships, as in previous investigations, were less than perfect. In particular, the cool guys relationship was likely to be conceptualized differently by children at varying levels of peer popularity, and some of the children perceived the term "cool" as antiquated. Similarly, best friends and disliked kids could (and should) mean different things to different children. Although our procedure included strategies for increasing children's understanding of what types of relationships we were asking them about, we expect that our definitions reflected real experience more accurately for some children than for others. Incorporating the complexity of children's peer relationships into our investigations of peer influence remains an important challenge.

For this largely socially competent, middle-class suburban sample, best friends presented the clearest source of peer influence toward shared risky behavior. Given that children are more likely to play with their friends than with children they wish were their friends or children they dislike, it is this source of peer influence that is most likely to be readily encountered in daily life. That the presence of best friends in risk-taking situations is both most likely and most risk-increasing is of obvious concern given the way this combination could be expected to elevate injury risk. Additionally, current psycho-educational programs and media campaigns often focus on scenarios in which a child encounters encouragement to participate in dangerous behavior from a peer with whom he apparently does not have a close personal relationship. While our results suggest that if a child considers peers desirable ("cool") he is more likely to participate in risky behavior with them than he is by himself, best friends are a stronger influence toward risk-taking. The more

positive the best-friends relationship and the more socially competent the child, the stronger the influence toward risky behavior his best friends exert.

One important caveat to interpreting the application of these results to real-life risk-taking situations is that while socially competent children indicated that they were unlikely to take risks alone but more likely to do so when encouraged to participate in these behaviors with their friends, it is unknown to what extent the child's friends would encourage risky behavior (especially given that they, too, might report similar reluctance to participate in these risks alone), or to what extent the child would expect his friends to encourage risky behavior. The dynamic interplay between children's risk-taking decision-making in group contexts is not represented here, so it is unknown to what extent these children should be expected to encounter in daily life the type of peer encouragement described here. More sophisticated investigations could include an examination of the correspondence between a child's perceived likelihood that his friends would encourage particular risk-taking behaviors and his reported likelihood of performing these behaviors.

Reducing child injuries is an important social goal worthy of resource investment. However, the apparent effect of social context on children's risky behavior suggests that strategies for reducing child injuries during peer activities must be designed that accommodate peer socialization goals. This is especially critical given our evidence that socially competent children report greater increases in risk-taking with their friends than do their less socially competent counterparts. That highly functioning children show this pattern suggests that it is likely a skilled, functional behavior. Small groups of pre-adolescent boys with positive peer relationships are likely to take physical risks together, and programs aimed at reducing the danger associated with this behavioral pattern should respect the social competency of the children making these decisions. Being susceptible to "peer pressure" in middle childhood, now a behavior adults stigmatize, in itself clearly should not be considered dysfunctional. For highly socially adapted boys, choosing to participate in peer sanctioned risky activities is unlikely to be the result of unskilled contextual decision-making. As active agents in their own development, children with positive peer relationships should not be considered those most vulnerable to counter-developmental influences. Programs designed to reduce "peer pressure" are unlikely to succeed with socially incompetent children by providing them with social skills (since these would likely increase peer influence, not the opposite). And they are unlikely to

succeed with socially competent children until they acknowledge that for these children the need to build peer relationships over-rides admonitions against dangerous behavior, and that this is a functional behavioral choice. For parents and adult society, the cost-benefit analysis in risky peer-pressure situations dictates that prevention of serious harm to the child supersede any perceived benefits in the form of fun or peer culture acceptance. However, recognizing that "peer pressure" is a developmentally adaptive aspect of child functioning will be a prerequisite to impacting behaviors judged by adults to represent too great a risk to the child's health.

References

- Achenbach, T., & Edelbrock, C. (1983). *Manual for the Revised Child Behavior Checklist and Revised Child Behavior Profile*. USA: Queen's City Printers.
- Argyle, M. (1985). Social behavior problems and social skills training in adolescence. In B. H. Schneider, K. H. Rubin, & J. E. Ledingham (Eds.), *Children's peer relations: Issues in assessment and intervention* (pp. 207-224). New York: Springer-Verlag.
- Armsden, G. C., & Greenberg, M. T. (1987). The inventory of parent and peer attachment: Individual differences and the relationship to psychological well-being in adolescence. *Journal of Youth and Adolescence*, *16*, 427-454.
- Bennett, B. (1982). Construct validity of sociometric status as a measure of social competence. *Unpublished doctoral dissertation, Virginia Polytechnic Institute & State University*.
- Bigelow, B., Tesson, G., & Lewko, J. (1992). The social rules that children use: Close friends, other friends, and "other kids" compared to parents, teachers, and siblings. *International Journal of Behavioral Development*, *15*, 315-335.
- Bjørklid, P. (1985). Children's outdoor environments from the perspectives of environmental and developmental psychology. In T. Garling & J. Valsiner (Eds.), *Children within environments: Toward a psychology of accident prevention* (pp. 91-106). New York: Plenum Press.
- Boyce, W. T., & Sobolewski, S. (1989). Recurrent injuries in schoolchildren. *American Journal of Diseases of Children*, *143*, 338-342.
- Brook, J. S., Whiteman, M., Gordon, A. S., & Brook, D. W. (1990). The role of older brothers in younger brothers' drug use viewed in the context of parent and peer influences. *Journal of Genetic Psychology*, *151*(1), 59-75.
- Centers for Disease Control/CDC (1990). Childhood injuries in the United States. *American Journal of Diseases of Children*, *144*, 627-646.
- Christensen, S., & Morrongiello, B. A. (1997). The influence of peers on children's judgements about engaging in behaviors that threaten their safety. *Journal of Applied Developmental Psychology*, *23*, 33-44.
- Clark, R., & Delia, J. (1976). The development of functional persuasive skills in childhood and early adolescence. *Child Development*, *47*, 1008-1014.
- Dodge, K. A., & Richard, B. A. (1985). Peer perceptions, aggression, and peer relations. In J. B. Pryor & J. D. Day (Eds.), *The development of social cognition* (pp. 35-58). New York: Springer-Verlag.

- Evers-Pasquale, W. L. (1978). The peer preference test as a measure of reward value: Item analysis, cross-validation, and replication. *Journal of Abnormal Child Psychology*, 6, 175-188.
- Finney, J. W., Christophersen, E. R., Friman, P. C., Kalnins, I. V., Maddux, J. E., Peterson, L., Roberts, M. C., & Wolraich, M. (1993). Society of Pediatric Psychology Task Force report: Pediatric psychology and injury control. *Journal of Pediatric Psychology*, 18, 499-526.
- Fischer, J., & Corcoran, K. (Eds.). (1994). *Measures for clinical practice: A sourcebook, Volume 1: Couples, families, and children*. (Second ed.). New York: Free Press.
- Ford, L. H., & Rubin, B. M. (1970). A social desirability questionnaire for young children. *Journal of Consulting and Clinical Psychology*, 35, 195-204.
- Furman, W., & Robbins, P. (1985). What's the point? Issues in the selection of treatment objectives. In B. H. Schneider, K. H. Rubin, & J. E. Ledingham (Eds.), *Children's peer relations: Issues in assessment and intervention* (pp. 41-54). New York: Springer-Verlag.
- Gårling, T., & Valsiner, J. (1985). Children within environments: Different approaches and their relationship to accident prevention. In T. Garling & J. Valsiner (Eds.), *Children within environments: Toward a psychology of accident prevention*. (pp. 239-245). New York: Plenum Press.
- Ginsberg, H. J., & Miller, S. M. (1982). Sex differences in children's risk-taking behavior. *Child Development*, 53, 426-428.
- Hart, R. (1979). *Children's experience of place*. New York: Halsted Press.
- Hartup, W. W. (1975). The origins of friendship. In M. Lewis & L. A. Rosenblum (Eds.), *Friendship and peer relations* (pp. 11-26). New York: John Wiley & Sons.
- Haslett, B. (1983). Preschoolers' communicative strategies in gaining compliance from peers: A developmental study. *Quarterly Journal of Speech*, 69, 84-89.
- Higgins, E. T., & Parsons, J. E. (1985). Social cognition and the social life of the child: stages as subcultures. In E. T. Higgins, D. N. Ruble, & W. W. Hartup (Eds.), *Social cognition and social development: A sociocultural perspective* (pp. 15-62). New York: Cambridge University Press.
- Hyson, M. C., & Bollin, G. G. (1990). Children's appraisal of home and neighborhood risks: Questions for the 1990s. *Children's Environments Quarterly*, 7, 50-60.
- Jaquess, D., & Finney, J. W. (1994). Previous injuries and behavior problems predict children's injuries. *Journal of Pediatric Psychology*, 19, 79-89.
- Jones, D. (1985). Persuasive appeals and responses to appeals among friends and acquaintances. *Child Development*, 56, 757-763.

- Kassin, S. M., & Pryor, J. B. (1985). The development of attribution processes. In J. B. Pryor & J. D. Day (Eds.), *The development of social cognition* (pp. 4-34). New York: Springer-Verlag.
- Levin, E., & Rubin, K. (1983). Getting others to do what you want them to do: The development of children's requestive strategies. In K. Nelson (Ed.), *Children's language* Hillsdale, NJ: Erlbaum.
- Lewis, C. E., & Lewis, M. A. (1984). Peer pressure and risk-taking behaviors in children. *American Journal of Public Health, 74*(6), 580-584.
- Lewis, M., Young, G., Brooks, J., & Michalson, L. (1975). The beginning of friendship. In M. Lewis & L. A. Rosenblum (Eds.), *Friendship and peer relations* (pp. 27-66). New York: John Wiley & Sons.
- Lightfoot, C. (1992). Constructing self and peer culture: A narrative perspective on adolescent risk taking. In L. T. W. a. J. Valsiner (Ed.), *Children's development within social context, Vol. 2: Research and methodology* (pp. 229-245). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Morrongiello, B. A., & Bradley, M. D. M. (1997). Sibling power: The influence of older siblings' judgements about risk-taking behaviours. *Injury Prevention, 3*, 23-28.
- Ollendick, T. H., & Schmidt, C. R. (1987). Social learning constructs in the prediction of peer interaction. *Journal of Consulting and Clinical Psychology, 16*, 80-87.
- Peterson, L. (1989). Latchkey children's preparation for self-care: Overestimated, underrehearsed, and unsafe. *Journal of Clinical Child Psychology, 18*, 36-43.
- Peterson, L., Ewigman, B., & Kivlahan, C. (1993). Judgments regarding appropriate child supervision to prevent injury: The role of environmental risk and child age. *Child Development, 64*, 934-950.
- Peterson, L., Farmer, J., & Mori, L. (1987). Process analysis of injury situations: A complement to epidemiological methods. *Journal of Social Issues, 43*, 33-44.
- Piche, G., Rubin, D., & Michlin, L. (1978). Age and social class in children's use of persuasive communication appeals. *Child Development, 49*, 773-778.
- Quine, S., & Stephenson, J. A. (1990). Predicting smoking and drinking intentions and behavior in pre-adolescents: The influence of parents, siblings, and peers. *Family Systems Medicine, 8*, 191-200.
- Rivara, F. P., & Mueller, B. A. (1987). The epidemiology and causes of childhood injuries. *Journal of Social Issues, 43*, 13-31.
- Rodriguez, J. G. (1990). Childhood injuries in the United States: A priority issue. *American Journal of Diseases of Children, 144*, 625-626.

- Rogoff, B. (1990). *Apprenticeship in thinking: Cognitive development in social context*. New York: Oxford University Press.
- Rohtengatter, T. (1981). *Traffic safety education for young children*. Lisse: Swets.
- Scheidt, P. C., Harel, Y., Trumble, A. C., Jones, D. H., Overpeck, M. D., & Bijur, P. E. (1995). The epidemiology of nonfatal injuries among US children and youth. *American Journal of Public Health, 85*, 932-938.
- Sheehy, N. P., & Chapman, A. J. (1985). Adults' and children's perceptions of hazard in familiar environments. In T. Garling & J. Valsiner (Eds.), *Children within environments: Toward a psychology of accident prevention* (pp. 51-64). New York: Plenum Press.
- Trawick-Smith, J. (1992). A descriptive study of persuasive preschool children: How they get others to do what they want. *Early Childhood Research Quarterly, 7*(1), 95-114.
- Valsiner, J., & Lightfoot, C. (1987). Process structure of parent-child-environment relations and the prevention of children's injuries. *Journal of Social Issues, 43*, 61-72.
- Williams, D., & Shaller, A. (1993). Peer persuasion: A study of children's dominance strategies. *Early Childhood Development and Care, 88*, 31-41.
- Wilson, M., Baker, S., Teret, S., Shock, S., & Garbarino, J. (1991). *Saving children: A guide to injury prevention*. New York: Oxford University Press.

Table 1 Selected Correlations by YCSD Group

Variables	High YCSD (excluded) N=15		Lower YCSD (included) N= 41	
	correlation coefficient	2-tailed p<	correlation coefficient	2- tailed p<
DA effect + IPA	.15	.70	-.32	.05
BA effect + IPA	.11	.80	.60	.001
General influence + PPT Peer	.52	.10	.79	.001

Table 2 Sample Sociodemographics (N = 41)

variable	units	mean (sd)	range
child's age	years	9.2 (0.9)	8.0 - 10.8
mom's age	years	40.2 (5.2)	29 - 52
dad's age	years	43.6 (6.0)	29 - 56

variable	value/label	n	% of sample
child's race	white/caucasian	33	80.5
	african-american	3	7.3
	biracial/other race	4	9.8
	not answered	1	2.4
child's school	public	37	90.2
	private	4	9.8
level in school	grade 2	1	2.4
	grade 3	19	46.3
	grade 4	20	48.8
	grade 5	1	2.4
adult participant	mother	37	90.2
	father	4	9.7
marital status	mom married	36	87.8
	mom not married	5	12.2
adults/ household	one	5	12.2
	more than one	36	87.8
kids in household	one	9	22.0
	two	20	48.8
	three or four	9	22.0
	five or six	3	7.3
child's birth order	oldest	13	31.7
	middle	8	19.5
	youngest	11	26.8
sex of siblings	brother(s)	13	31.7
	sister(s)	10	24.4
	both	9	22.0

dad's education	advanced degree	24	58.5
	college graduate	13	31.7
	less than college	2	4.8
mom's education	advanced degree	13	31.7
	college graduate	22	53.7
	less than college	4	9.8
	not answered	2	4.9
dad's occupation	professional	14	34.1
	educator	17	41.5
	other white collar	4	9.7
	self-employed	3	7.3
	homemaker	3	7.3
mom's occupation	professional	5	12.2
	educator	15	36.6
	other white collar	8	19.5
	self-employed	3	7.3
	homemaker	10	24.4
government asst	yes	1	2.4
	no	36	85.7
	not answered	5	11.9
household income	less than \$30K	2	4.9
	\$30-50K	9	22.0
	\$50-70K	7	17.1
	more than \$70K	18	43.9
	not answered	5	12.2

Table 3 Descriptive Statistics for non-demographic IVs

N = 39

Variable	Mean	sd	range
CBCL T-scores			
Activities	51.3	4.6	37-55
Attention Problems	52.5	4.1	50-63
Externalizing	44.2	9.2	30-66
Internalizing	46.6	9.9	34-70
School Competence	47.9	7.3	32-55
Social Competence	47.3	9.1	27-55
Thought Problems	52.1	5.0	50-70
Total Behavior Problems	45.1	8.4	33-67
PPT			
Adult	2.0	1.4	0-6
Alone	3.4	2.2	0-9
Peer	6.6	2.5	2-12
IPA Total	92.3	15.6	56-118
Social Functioning Composite	87.3	22.5	31-118
YCSD	7.7	3.2	2-16

Table 4 Scenarios Measure Item Statistics (N=41)

Item	Condition	Mean	Std Dev	Range	scenario label
01	Alone	1.49	.84	1-4	swim creek
	Best	2.88	1.05	1-4	
	Cool	2.32	.93	1-4	
	Disliked	1.12	.33	1-2	
02	Alone	1.24	.77	1-4	no helmet
	Best	1.44	.87	1-4	
	Cool	1.29	.68	1-3	
	Disliked	1.10	.49	1-4	
03	Alone	2.07	1.13	1-4	cross creek
	Best	2.78	.99	1-4	
	Cool	2.41	.89	1-4	
	Disliked	1.29	.46	1-2	
04	Alone	1.20	.81	1-4	play with gun
	Best	1.54	.87	1-4	
	Cool	1.24	.62	1-4	
	Disliked	1.17	.67	1-4	
05	Alone	1.66	.99	1-4	raccoon help
	Best	2.02	1.08	1-4	
	Cool	2.10	1.09	1-4	
	Disliked	1.46	.81	1-4	
06	Alone	2.05	1.18	1-4	cross street
	Best	2.78	1.04	1-4	
	Cool	2.39	1.02	1-4	
	Disliked	1.32	.65	1-4	
07	Alone	2.34	1.20	1-4	tree house
	Best	2.85	1.11	1-4	
	Cool	2.49	1.10	1-4	
	Disliked	1.32	.65	1-4	
08	Alone	1.90	1.18	1-4	climb roof
	Best	2.20	1.23	1-4	
	Cool	2.07	1.15	1-4	
	Disliked	1.32	.61	1-3	
09	Alone	1.88	1.19	1-4	jump swings
	Best	2.32	1.31	1-4	
	Cool	1.98	1.13	1-4	
	Disliked	1.44	.87	1-4	
10	Alone	2.22	1.19	1-4	hot chocolate
	Best	2.54	1.25	1-4	
	Cool	2.32	1.11	1-4	
	Disliked	1.32	.69	1-4	
11	Alone	1.73	1.07	1-4	wagon down hill
	Best	2.41	1.07	1-4	
	Cool	1.95	.92	1-4	
	Disliked	1.20	.40	1-2	
12	Alone	1.63	1.02	1-4	army men jump
	Best	2.22	1.24	1-4	
	Cool	1.90	1.00	1-4	
	Disliked	1.22	.61	1-3	

Table 5. Scenario Item Statistics (N=41)

#	Scenario Label	Mean (across ABCD conditions)	Std dev	% sample all no (A=B=C=D=1)	% sample any yes (3 or 4 response)
01	swim creek	1.95	.79	15	73
02	no helmet	1.27	.70	71	22
03	cross creek	2.14	.87	07	76
04	play w gun	1.29	.74	54	15
05	raccoon help	1.81	.99	39	39
06	cross street	2.13	.97	12	63
07	tree house	2.25	1.02	15	71
08	climb roof	1.87	1.04	29	44
09	jump swings	1.91	1.06	39	46
10	hot chocolate	2.10	1.06	24	63
11	wagon hill	1.82	.87	17	51
12	army men	1.74	.97	39	44

Table 6 Risk-Taking Scenarios Results (N=41)

peer context condition	sample mean	sd	min	max
Alone	1.79	.59	1.00	3.75
Best friends	2.33	.74	1.17	3.92
Cool guys	2.04	.59	1.00	3.25
Disliked kids	1.27	.26	1.00	2.08

Repeated Measures ANOVA: Test of within-subjects effect of Context (Alone/Best Friends/Cool Guys/Disliked Kids) on reported risk-taking.

Source of variation	SS	df	MS	F	sig. of F
Context	24.77	3	8.26	50.46	.000

Planned Comparisons (paired samples t-tests)	t-value	df	sig. of t (two-tailed)
Best friends vs. Alone	6.79	40	.000
Cool guys vs. Alone	3.49	40	.0001
Disliked kids vs. Alone	- 5.63	40	.000
Cool guys vs. Best friends	- 3.79	40	.000

Table 7. Influence of peer context on risk-taking (N=41)

Peer Influence Effect	Mean	sd	min	max
best friends effect (BA)	.54	.51	-.33	1.92
cool guys effect (CA)	.25	.46	-1.33	1.25
disliked kids effect (DA)	-.52	.59	-2.67	.58
positive peer preference (BC)	.29	.49	-.92	2.08
general influence	1.55	.96	.00	3.92

Table 8 Multiple Regression Analysis Parameters

statistics package	SAS PC	
method	linear multiple regression, forward selection	
significance limits	entry .10	removal .05
outcome variable	general influence effect	(see Table 3)
potential predictor variables included in the analysis*		
ADLTHH	# of adults in the household	
BROSDI	whether or not the child has brothers (yes / no)	
COMUNTY	# of years child has resided in his community	
DADAGE	father's age	
IPATOT	total score, friendship satisfaction measure	
KIDSHH	# of children in the household	
M.ALONE	mean risk-taking score, alone condition, scenarios measure	
MARDI	mother's marital status, dichotomized (married / other)	
MDLFDICH	medically attended lifetime injuries, dichotomized (any / none)	
MOMAGE	mother's age	
MOMEDDI	mom's ed, dichotomized (college or less / advanced degree)	
PPTADULT	adult subscale score, peer reinforcement value measure	
PPTALONE	alone subscale score, peer reinforcement value measure	
PPTPEER	peer subscale score, peer reinforcement value measure	
SCHLDI	child's school, dichotomized (public / other)	
SOC.T	social competence T-score (CBCL social competency scale)	
SOCPR.T	social Problems T-score (CBCL social problems clinical scale)	
YCSDTOT	total score, Young Children's Social Desirability Scale	

Table 9. Correlation Matrix for Regressed Variables (N = 40)

	a	b	c	d	g	i	k	m1	m2	m3	m4	m5	p1	p2	p3	s1	s2	s3	y
a (adlthh) ¹	1.00																		
b (brotdi) ²	.17	1.00																	
c (comnty) ¹	-.16	-.01	1.00																
d (dadage) ¹	.25	-.01	.12	1.00															
g (geninflu) ³	.10	-.32	-.24	-.17	1.00														
i (ipatot) ¹	-.09	-.19	-.26	-.49	.45	1.00													
k (kidshh) ¹	.14	.53	.04	.33	-.12	-.41	1.00												
m1 (m.alone) ¹	.17	-.19	-.15	-.24	.53	.18	-.11	1.00											
m2 (mardi) ²	.73	.24	-.11	.27	-.24	-.22	.16	-.20	1.00										
m3 (mdlfdich) ²	.00	-.12	.03	-.14	.20	.05	.23	.00	-.17	1.00									
m4 (momage) ¹	-.05	.07	.40	.74	-.43	-.57	.28	-.39	.26	-.35	1.00								
m5 (momeddi) ²	.00	.00	.17	.05	.03	.10	-.24	.08	-.22	-.16	.02	1.00							
p1 (pptadult) ¹	.00	.08	.32	.11	-.41	-.14	-.07	-.14	.18	-.10	.30	.27	1.00						
p2 (pptalone) ¹	-.11	.30	.16	.17	-.69	-.32	.09	-.24	.01	-.39	.40	-.10	-.04	1.00					
p3 (pptpeer) ¹	.10	-.30	-.32	-.20	.81	.35	-.04	.28	-.10	.38	-.51	-.06	-.53	-.83	1.00				
s1 (schldi) ²	.00	-.18	-.05	-.37	.06	.33	-.43	.30	-.09	-.06	-.22	.22	.01	.01	-.02	1.00			
s2 (socpr.t) ¹	.33	-.09	.11	.21	.19	-.35	.23	.28	.11	.13	.14	-.05	-.14	.08	.01	-.18	1.00		
s3 (soc.t) ¹	.17	-.10	-.00	-.28	.26	.39	-.36	.07	.07	-.19	-.25	.27	-.08	-.16	.18	.47	-.24	1.00	
y (ycsdtot) ¹	.16	.24	.35	-.19	-.06	-.12	.16	.16	.06	.14	-.11	.04	.04	-.04	.01	.14	.03	.06	1.00

¹ = continuous variable

² = dichotomous categorical variable

³ = outcome variable

Table 10
Multiple Regression Model of Significant Predictors of Peer Influence on Risk-Taking (N=40)

Model R2	Adj. R2	Root MSE	F Value	Prob>F
.7944	.7716	.4450	34.782	.0001

Variable	Parameter Estimate	Standard Error	T	Prob>T
1. PPTPEER	.2406	.0305	7.889	.0000
2. SOCPR.T	.0784	.0219	3.580	.0010
3. MARDI	- .6602	.2099	- 3.145	.0033
4. IPATOT	.0146	.0054	2.699	.0105

Table 11. Analyses for Low vs. High Social Functioning Groups.

Repeated Measures ANOVA, mixed-design: 1 within-subjects factor, Context (4 levels), and 1 between-subjects factor, Social Competency (2 levels).

source of variation	SS	df	MS	F	sig of F
Social Competence (main)	2.03	1	2.03	2.82	.102
Context (main)	21.50	3	7.17	58.56	.000
Social Competence by Context (interaction)	3.58	3	1.19	9.76	.000

Planned Comparisons

	Low Group (n=20)	High Group (n=19)	sig. diff.* (p <) (one-tailed)
Peer Context Condition	Mean (sd)	Mean (sd)	
Alone	1.70 (.66)	1.81 (.48)	n.s.
Best Friends	1.92 (.57)	2.61 (.61)	.001
Cool Guys	1.89 (.54)	2.14 (.63)	n.s.
Disliked Kids	1.34 (.30)	1.19 (.17)	.05

*differences between group means were tested via independent samples t-tests

Peer Influence Effects Comparisons

	Low Group (n=20)	High Group (n=19)	sig. diff. (p <)
Peer Influence Effect	Mean (sd)	Mean (sd)	
BA Effect	.22 (.28)	.80 (.45)	.001
BC Effect	.03 (.34)	.47 (.48)	.005
CA Effect	.18 (.39)	.33 (.50)	n.s.
DA Effect	-.37 (.67)	-.62 (.40)	n.s.
(A=B=C=D) ^a	5.55 (3.27)	2.63 (2.06)	.001

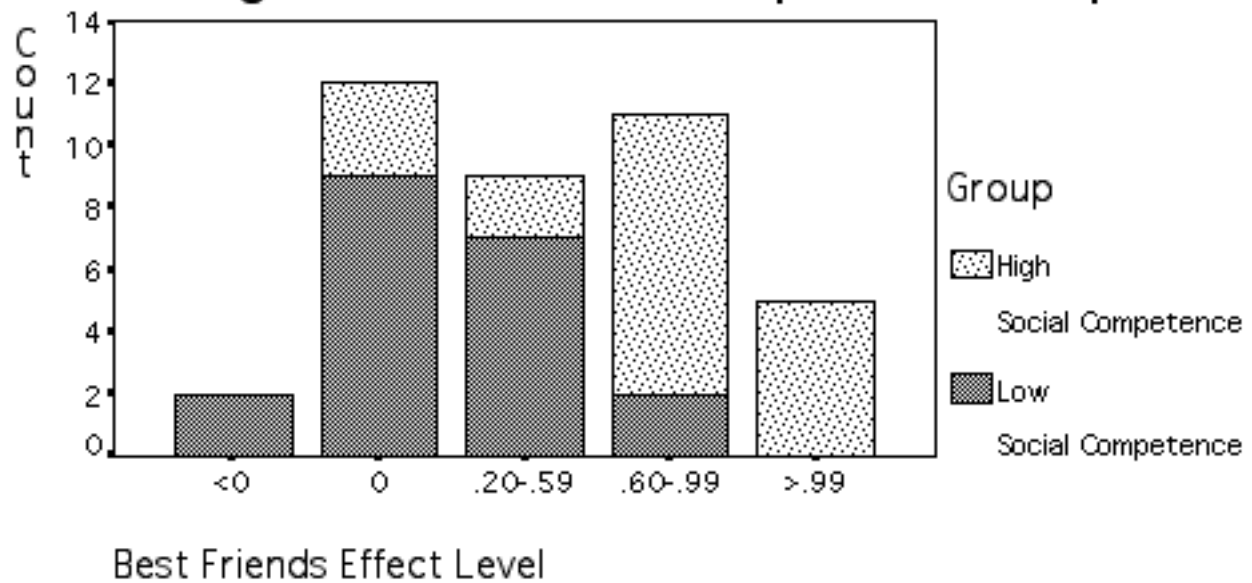
^a # (of 12) scenarios w/ no peer influence

Table 12 CA Effect when sample is divided into quartiles based on Social Competence Composite scores

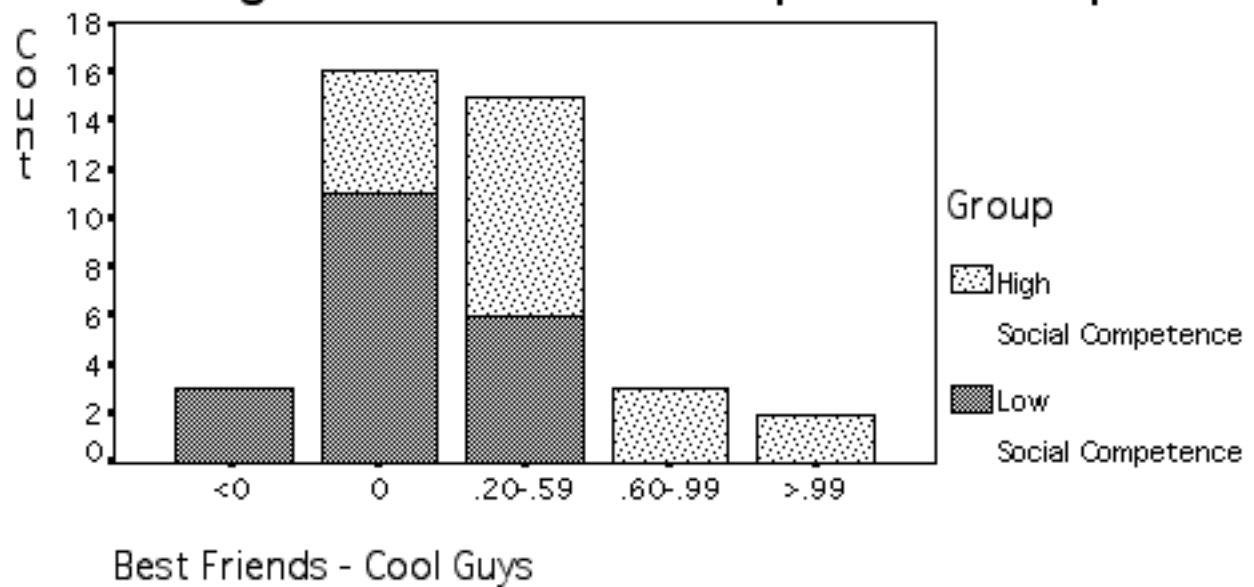
<u>Group (Social Competence)</u>	<u>Group N</u>	<u>CA Effect*</u>
1 (Lowest)	9	.31
2 (Med-Low)	11	.08
3 (Med-High)	9	.15
4 (Highest)	10	.49

* all pair-wise comparisons were not significant

**Figure 1: Best Friends Effect Levels
for High and Low Social Competence Groups**



**Figure 2: Bests over Cools Preference
for High and Low Social Competence Groups**



Appendix A:
Peer Relationships Interview Form

Name:

Date:

Age:

Grade:

In a few minutes I'm going to ask you to tell me what you would do in different situations. But first I want to talk to you for a few minutes about different kinds of relationships you might have with other kids. Some kids are your best friends, and some might not be your best friends but you still like them, while still other kids might be kids you really don't like to play with at all. Let's think about best friends first. These are the kids you like to play with most of all. You do lots of stuff together, you like a lot of the same things, and they're the kids you like most of all. Is that what you think of as "best friends?" (Yes/No--if no, solicit description of best friendship.) Tell me the names of your three best friends: wait for names (All boys, right?)

Names	Ages	How long been best friends?
-----	-----	-----
-----	-----	-----
-----	-----	-----

Now let's talk about another kind of relationship you might have with some kids. There might be some boys who aren't your best friends but you want to be better friends with them. These are kids that you like but maybe you haven't had a chance to do a lot of stuff together yet, or you haven't become good friends yet. You think they're cool, and you want them to like you. Can you tell me the names of three boys you'd like to be better friends with?

Names	Ages	How long known each other?
-----	-----	-----
-----	-----	-----
-----	-----	-----

OK. Now I'd like to ask you about boys you don't like. These are kids that aren't really your friends and you don't want to play with them--maybe they're mean or they get other kids in trouble, or maybe you just don't like a lot of the same things. Can you tell me the names of three boys you don't like?

Names	Ages	How long known each other?
-----	-----	-----
-----	-----	-----
-----	-----	-----

Appendix B:
Risk-taking in Peer Contexts Scenarios Measure

Subject Name: _____

Interviewer Name: _____

Date: _____

1. Imagine that you know some cool boys who aren't your close friends yet, but really want them to like you. One Saturday, you're playing with them by a creek that has a good spot for swimming. There's no one around except you and the cool boys. It's a very hot day, and swimming looks like a fun way to cool off. The boys jump in the water and start calling to you to join them. Would you get in the water with the cool boys?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of the cool boys, it was just you and some of your best friends at the creek --would you get in the water with your best friends?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of your best friends, it was just you and some boys you don't like at the creek--would you get in the water with boys you don't like?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if you were by yourself at the creek--would you get in the water alone?

1	2	3	4
NO	Probably NO	Probably YES	YES

2. One hot summer day you're out riding your bike when you see some of your best friends riding their bikes. You're wearing your helmet, and your head is getting sweaty and uncomfortable. None of them is wearing a helmet. They say, "Hey, want to ride bikes with us?" Would you take off your helmet with your best friends?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of your best friends, you met those cool boys you want to be friends with riding their bikes--would you take off your helmet with the cool boys?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of those cool boys, you met some boys you don't like riding their bikes--would you take off your helmet with boys you don't like?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if you were by yourself--would you take off your helmet alone?

1	2	3	4
NO	Probably NO	Probably YES	YES

3. One day you and some of your best friends go fishing down at the creek. When you get to the creek, one of your friends says that the best fishing spot is just across the creek. Your friends start climbing over the rocks to get across. Would you cross the creek with your best friends?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of your best friends, you were with those cool boys you want to be friends with--would you cross the creek with the cool boys?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of the cool boys, you were with some boys you don't like--would you cross the creek with boys you don't like?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if you were by yourself--would you cross the creek alone?

1	2	3	4
NO	Probably NO	Probably YES	YES

4. One day you and some cool boys you want to be friends with are at your house after school. There aren't any adults around, and you're all getting bored. You start digging around in the garage and come across a wooden box and you wonder what's inside. When you open the box you discover that there is a gun inside. The other boys notice what's going on and want to have a look at the gun. Would you take the gun out of the box with the cool boys?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of those cool boys you were with some boys you don't like--would you take the gun out of the box with boys you don't like?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of the boys you don't like, you were with some of your best friends--would you take the gun out of the box with your best friends?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if you were by yourself--would you take the gun out of the box alone?

1	2	3	4
NO	Probably NO	Probably YES	YES

5. One day you and some of your best friends are walking down the street when you come across a raccoon lying by the side of the road. It looks sick, but it's making a little noise, so you know it's not dead. One of the boys says, "We better get it to a doctor--let's carry it together." The boys start bending over to get the raccoon--one of them looks at you and says, "Hey, are you going to help?" Would you help pick up the raccoon with your best friends?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of your best friends, you were with those cool boys you want to be friends with--would you help pick up the raccoon with the cool boys?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of some cool boys, you were with some boys you don't like--would you help pick up the raccoon with boys you don't like?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if you were by yourself--would you pick up the raccoon alone?

1	2	3	4
NO	Probably NO	Probably YES	YES

6. One day you're on your way to the park when you meet some boys you don't like. They say they're going to play in the big field across the street and ask if you want to go with them. You get to the street and stand there waiting to cross--the boys are getting ready to run across. Would you cross the street with the boys you don't like?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of being with the boys you don't like, you were with your best friends--would you cross the street with your best friends?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of your best friends, you were with some cool boys you want to be friends with--would you cross the street with the cool boys?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if you were by yourself--would you cross the street alone?

1	2	3	4
NO	Probably NO	Probably YES	YES

7. One Saturday, you and some cool boys you want to be friends with are playing in the field near your house. One of the boys sees an old tree house in a tree across the field. You all go running over to the tree and look up at the tree house. There are little wood steps nailed into the side of the tree, and it looks like you could all fit in the tree house. One of the boys says, "Let's check it out!" and starts to climb up the tree. Would you climb up the tree with the cool boys?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of the cool boys, it was just you and some of your best friends -- would you climb up the tree with your best friends?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of your best friends, it was just you and some boys you don't like--would you climb up the tree with boys you don't like?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if you were by yourself--would you climb up the tree alone?

1	2	3	4
NO	Probably NO	Probably YES	YES

8. One day you and some of your best friends are playing outside at your house when you hear a sad "meow, meow" sound. You all look up and see a kitten on the garage roof. One of your friends says, "He looks pretty scared--let's climb up there and get him down. I climb on my garage all the time." He starts looking around for the best way to get up on the roof. Would you climb up to the roof with your best friends?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of your best friends, you were with some of those cool boys you want to be friends with--would you climb up to the roof with the cool boys?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of the cool boys, you were with some boys you don't like--would you climb up to the roof with boys you don't like?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if you were by yourself--would you climb up to the roof alone?

1	2	3	4
NO	Probably NO	Probably YES	YES

9. One day you and some of your best friends are swinging on swings at the park. One of your friends says "Let's swing as high as we can and then jump off!" Everybody gets their swing going really high, and then your friends start jumping off their swings. Would you jump off swings with your best friends?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of your best friends, you were with those cool boys you want to be friends with--would you jump off swings with the cool boys?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of some cool boys, you were with some boys you don't like--would you jump off swings with boys you don't like?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if you were by yourself--would you jump off a swing alone?

1	2	3	4
NO	Probably NO	Probably YES	YES

10. You and some of your best friends are playing outside in winter. When you go inside, one of your friends says, "Let's make hot chocolate." Everybody says, "Yeah!" You go in the kitchen and get out a pan to heat up the milk on the stove. Would you make hot chocolate with your best friends?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of your best friends, you were with some boys you don't like--would you make hot chocolate with boys you don't like?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of some boys you don't like, you were with some cool boys you want to be friends with--would you make hot chocolate with the cool boys?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if you were by yourself--would you make hot chocolate alone?

1	2	3	4
NO	Probably NO	Probably YES	YES

11. You're playing outside when you see some cool boys you want to be friends with. They have a wagon in the road at the top of a little hill. One of them says to you, "We're taking turns riding the wagon down the hill--it's like sledding without snow! Wanna try it?" Would you ride the wagon with the cool boys?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of some cool boys, you were with some of your best friends--would you ride the wagon with your best friends?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of your best friends, you were with some boys you don't like--would you ride the wagon with boys you don't like?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if you were by yourself--would you ride the wagon alone?

1	2	3	4
NO	Probably NO	Probably YES	YES

12. One day you and some cool boys you want to be friends with are watching TV. On the TV show, you see army men jumping out of an airplane with parachutes. One of the cool boys says, "Let's play army men--we could use sheets or towels to make parachutes and then jump off the brick wall in the backyard!" The other boys say, "Yeah!" You find some towels and everybody runs outside. The boys start climbing up on the brick wall. Would you jump off with your parachute with the cool boys?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of the cool boys, you were with the boys you don't like--would you jump off with your parachute with boys you don't like?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if instead of the boys you don't like, you were with some of your best friends--would you jump off with your parachute with your best friends?

1	2	3	4
NO	Probably NO	Probably YES	YES

Now, what if you were by yourself--would you jump off with your parachute alone?

1	2	3	4
NO	Probably NO	Probably YES	YES

Curriculum Vita

Kirsten Elizabeth Bradbury

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Department of Psychology
Virginia Tech
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Education

Virginia Polytechnic Institute & State University
Graduate Student in Clinical Psychology Fall, 1995-present

University of Texas at Austin
B.A. May, 1992 Major: Psychology Minor: English

Professional Affiliations and Organizations

Student Member, Association for Advancement of Behavior Therapy (AABT)

Awards and Honors

VT Graduate Students Association Travel Grant Award (\$200), 1998
VT Graduate Students Association Research Grant Award (\$300), 1997

Research Experience

VA Tech Dept. of Psychology
Graduate Research Assistant

*Supervisor: Jack W. Finney, Ph.D.
August 1995 - May 1999*

Research coordinator for Dr. Jack Finney, responsible for organizing research team activities, conducting team meetings, supervising and training undergraduate assistants, performing electronic database literature searches, generating project ideas, reading and discussing recent journal articles, writing and submitting Human Subjects Committee proposals, selecting and designing measures, recruiting subjects, gathering and analyzing data, preparing manuscripts for publication. Research projects described below:

1. Teaching child safety to adolescent mothers: Provided home-based therapy to adolescent mothers of toddlers in experimental protocol examining effects of behavioral and psychoeducational parent training on child dangerous behavior and parent supervisory skill. With Gullotta & Finney.
2. Peer influences on risk-taking in middle childhood: Complete responsibility for design and implementation of project examining peer socialization influences on unsupervised risk-taking behavior that could result in immediate physical injury. Participants: community sample of 59 8-10-year-old boys and their parents. With Finney. (Master's thesis defended December, 1998.)
3. School playgrounds injury study: Designed, planned, and coordinated playground safety inspections and collection of school injury records in a preliminary investigation of link between playground equipment safety status and unintentional injuries to elementary-school students. With Finney.
4. Pediatric HMO utilization studies: Ongoing series of projects examining psychosocial influences on pediatric health care utilization in a large longitudinal sample (N = ~400) of 5-11-year-old children. Current projects include an examination of psychological distress and psychiatric referral in pediatric primary care, a regression analysis of influences on rates of unintentional injury, and an analysis of shifts in pediatric utilization over time. With Finney, Janicke, & Boeving.
5. Accuracy of adherence self-reports II: Analogue experiment examining the effects of experimenter demands on the accuracy of self-reports of adherence to a prescribed behavioral regimen. Participants: 81 undergraduate psychology students.

**Univ. of Texas Dept. of Psychology
Undergraduate Research Assistant**

*Supervisor: Caryn L. Carlson, Ph.D.
1990-1992*

Assistant on three projects examining the functioning of school-aged children with Attention-Deficit Hyperactivity Disorder, including: 1) differential effects of various behavior modification procedures on the laboratory performance of ADHD boys on academic tasks; 2) effects of comprehensive summer day treatment program for ADHD boys and girls; and 3) gender differences in ADHD symptomatology. Administered assessment measures and experimental protocols to children, assisted with various organizational and clerical tasks, scored and entered data.

Clinical Experience

**Psychological Services Center of VA Tech
Fourth Year Practicum Clinician**

*Supervisor: Robert S. Stephens, Ph.D.
August 1998-May 1999*

Primarily responsible for intermediate supervision of child and family cases being seen by more junior graduate clinicians. Also co-therapist on family therapy case.

**Carilion Community Hospital Dept. of Pediatrics
Pediatric Psychology Externship**

*Supervisor: David Hamilton, Ph.D.
1997-98*

Externship activities have included a combination of educational activities (e.g., complete readings on pediatric psychosocial issues, receive training in hospital procedures and precautions); professional development experiences (e.g., navigating bureaucratic channels to establish externship program and research relationship with Carilion, attending medical rounds, participating in meetings of the pediatric Psychosocial Team); direct services to inpatients and their families in general pediatrics, pediatric intensive care unit, and hematology/oncology specialty clinic; case consultation with hospital staff, and development of psychological resources (e.g., informational brochures, referral lists) for patients and families. Attended presentations on Leukemia, Asthma, SIDS, gastrointestinal disorders, and other pediatric topics. Undertook training in universal precautions and safety policies in hospital environment. Observed numerous meetings of hospital administrative committees and boards. Toured Neonatal Intensive Care Unit. Began development of a chart review coding system; created support services needs assessment survey for parents of pediatric oncology and hematology patients.

**Psychological Services Center of VA Tech
Graduate Clinician**

*Supervisor: Thomas H. Ollendick, Ph.D.
May 1997-August 1997*

Conducted child and adult psychoeducational assessments, adult employment screening evaluations (i.e., for policemen, priesthood candidates), and treatment of approximately 10 therapy clients including children, adolescents, adults, couples, and families with a wide range of presenting difficulties.

**Psychological Services Center of VA Tech
Second Year Practicum Clinician**

*Supervisor: Cynthia Lease, Ph.D.
August 1996-May 1997*

Conducted child and adult psychoeducational assessments and treatment of approximately 8 therapy clients including children, adolescents, adults, and families with a wide range of presenting difficulties.

**Psychological Services Center of VA Tech
Graduate Clinician**

*Supervisor: Richard Eisler, Ph.D.
May 1996-August 1996*

Conducted child and adult psychoeducational assessments, adult employment screening evaluations, and treatment of approximately 10 therapy clients including children, adolescents, adults, and families with a wide range of presenting difficulties.

**Psychological Services Center of VA Tech
First Year Practicum Clinician**

*Supervisors: Drs. J. W. Finney & R. Stephens.
August 1995-May 1996*

Conducted child and adult psychoeducational assessments and treatment of 2 therapy clients (one adult and one family case).

