Rural and suburban 5-8 year old children: Gun-injury risks and crisis responses.

Kirsten Bradbury

Dissertation submitted to the faculty of the Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of

Doctor of Philosophy
In
Psychology

Committee Members:
Jack W. Finney, Ph.D., Chair
Danny Axsom, Ph.D.
Lee D. Cooper, Ph.D.
Russell T. Jones, Ph.D.
Thomas H. Ollendick, Ph.D.

June 27, 2005
Blacksburg, Virginia

Keywords: (Children, injury, firearms/guns, parenting, rural, suburban, prevention, emergency responding, scenarios)

Rural and suburban 5-8 year old children: Gun-injury risks and crisis responses.

Kirsten Bradbury

ABSTRACT

Recent research has provided empirical support for counseling guidelines for pediatric gun safety and has demonstrated that some parental behaviors increase children's risk of gun injury. However, few data exist on patterns of gun-injury risks, especially for children younger than age 10, children from middle-class and non-urban families, and children of non-gun-owning vs. gun-owning parents. Part I of the study presents data on gun injury risks in a middle-SES sample of rural and suburban gun-owning and non-gun-owning parents and their 5-8-year-old children (N=60). Gun-owners (38.3% of the sample) endorsed an average of 10.57 out of 21 assessed gun injury risks, and evinced variable patterns of gun injury risks. Gun injury risks were much lower among non-gun-owners. However, a small number of non-gun-owners reported their children to have gun exposure risks more typical of gun-owners' children (e.g., child goes hunting/shooting). Part II of the study presents data on the children's responses to a crisis scenario involving a threat associated with defensive gun use (home intrusion). Children's crisis response plans were categorized as competent, passive, bold, or aggressive/gun. Competent plans were common (38.6%). However, most children generated non-competent crisis responses, including passive plans (21.1%), bold plans (19.3%), and aggressive/gun plans (21.1%). These results may help to identify styles of crisis response for targeted preventive interventions and emergency response training. The common theme in these results is that encouraging safe behavior, whether by young children responding to a crisis or by parents who own guns, requires an understanding of motivations for unsafe behavior and barriers to safer behavior.

Table of Contents

List of Tables

Dedication

For Jimmy and Jane, whose support and inspiration make anything possible.

Rural and suburban 5-8-year-old children: Gun-injury risks and crisis responses.

Prelude and Apologia

The original title of the proposed dissertation study was "Gun acculturation predictors of children's gun access decisions." Nothing is known about gun acculturation in families, and predicting children's gun access decisions could allow for better prevention of gun injuries related to gun access. Unfortunately, the proposed study had a number of serious design flaws and encountered major challenges to implementation as well. Any one of these many problems might have weakened the project, but together they completely derailed it. The goals of the proposed study were not only to develop a parent-report form of gun acculturation and to develop a scenario-interview method of assessing risky gun-access responding in children, but to predict the children's risky gun responses from the parents' acculturation responses. The study as proposed was infeasible for a number or reasons related to flawed design as well as to unforeseen problems with implementation. Despite these difficulties, we constructed as many of the proposed analyses as possible, including factor analyses of the parent measure, categorizations of the children's responses, and work to prepare the data for regression analyses. However, the proposed predictive analyses could not be conducted, largely due to an inadequate number of gun-related responses to predict, but also due to problems in the measurement model used to design the parent measure. These problems are described in greater detail in four Appendices. Appendix A provides a longer description of the original study and the flaws that derailed it. Appendix B contains the original data from the parent measure, including the factor analysis results and discussion. Appendix C contains the full data from the child interviews, and Appendix D addresses the fatally flawed regression analyses to predict children's responses from scores on the parent measure.

This was, indeed, a learning experience beyond what I anticipated. To develop interesting and creative studies is fine, but only if they can be run. There is much to be said for asking one question at a time, and even if the question that needs to be asked next isn't the most interesting one in a given sequence, some questions can't be answered until less interesting ones have been. Such is the nature of incremental contributions to scientific knowledge. This sounds basic, I know, but it has not been an easy lesson for me to learn. I want to ask the most interesting questions I can think of. Unfortunately it is clear that this is true of me even when the questions that interest me most aren't ready to be asked because preliminary questions haven't been answered yet. Thanks to this experience, I have become increasingly focused on getting answers, even if these answers are to smaller or more preliminary questions. Fortunately, recent advances in research on children's gun injuries have allowed for some of the data we collected for this study to provide valuable answers to some rather small but necessary questions. Indeed, by focusing on a tighter subset of the voluminous parent and child data, treating the parent subset and the child subset as two separate parts of the study, and forgoing any attempt to answer premature questions about the relationship between parent and child responses, we arrived at a study with real potential to contribute, albeit in a small, incremental way, to the developing literature on gun-related parenting and children's crisis responding. This study is presented as the dissertation entitled "Rural and suburban 5-8-year-old children: Gun-injury risks and crisis responses."

Rural and suburban 5-8-year-old children: Gun-injury risks and crisis responses.

Kirsten Bradbury

Introduction & Literature Review

A number of important changes have occurred in the world of pediatric gun injury in recent years. First and foremost, recent analyses indicate that between 1993 and 2000, the number of children age 14 and under who sustained non-fatal gunshot wounds decreased by more than 50%, and fatal gun injuries to children also decreased substantially (CDC, 2000; Eber, Annest, Mercy, & Ryan, 2004; Fingerhut & Christoffel, 2002). Experts from many disciplines have proposed that the decrease in gun injuries to children in the late 1990's is largely attributable to reductions in the number of guns in American homes and decreasing rates of community violence during this period (Cole, 1999; Eber et al., 2004; Hardy, 2002a; Helmuth, 2000; Johnson, Coyne-Beasley, & Runyan, 2004; Kellermann, Fuqua-Whitley, Sampson, & Lindenmann, 2000; Powell, Jacklin, Nelson, & Bland, 1998; Rosengart et al., 2005).

For Americans of all ages, gun injury rates were high, and steadily increasing, during the 1980's and early 1990's, and gun-related violence peaked at near-epidemic levels in the mid-90's (Annest & Mercy, 1998; Buechner, 1997; Buechter, Wright, & Maher, 1997; Farquhar, 1996; Huston, Anglin, & Eckstein, 1996; Hutson, Anglin, Kyriacou, Hart, & Spears, 1995; Hutton, 1995; Mercy, Ikeda, & Powell, 1998; Nance, Stafford, & Schwab, 1997; Sadowski & Munoz, 1996; Senturia, Christoffel, & Donovan, 1996; Spigner, 1998; Stanton, Baldwin, & Rachuba, 1997; Zavoski, Lapidus, Lerer, & Banco, 1995). The rise in gun-related fatalities during these years, especially among young people, prompted a substantial increase in basic and applied research, and the literature on gun-related behavior in children and parents has expanded and matured in recent years (Barber et al., 2000; Berg, 2001; Cherry, Runyan, & Butts, 2001; Christoffel, 1999; Dickinson, 2000; Galland, 2000; R. Hayes, LeBrun, & Christoffel, 1999; Hemenway,

Azrael, & Miller, 2000; Kuhns, 1998; Marwick, 1999; Powell & Tanz, 1999; Price & Oden, 1999; Rausch, Sanddal, Sanddal, & Esposito, 1998; Rodriguez & Gorovitz, 1999). In particular, improvements in technology and the advent of a comprehensive national injury reporting system (The National Electronic Injury Surveillance System) have allowed for meaningful large-scale examinations of the circumstances under which children are injured by guns, including the setting/location, relationship of shooter to the injured child, intent, and medical details of the injury (Eber et al., 2004; Longjohn & Christoffel, 2004; Nguyen, Annest, Mercy, Ryan, & Fingerhut, 2002; Odero, Tierney, Einterz, & Mungai, 2004). Consequently, much more is now known about pediatric gun phenomena, and more definitive prevention recommendations can be made than ever before.

Despite all the good news, experts caution that the most recent epidemiological gun injury data available are 5 years old, and that a disturbing re-bound in the number of gun injuries to children is expected for the years 2001-2005 (Eber et al., 2004). The social and political climate 'post-9/11' has not been conducive to maintaining decreases in gun injury rates (Frattaroli, 2003; Rappaport, 2002; Seltzer, 2002), and American children in the early years of the 21st century have lost many of their protections against gun injury (Campbell, Radisch, Phillips, & von Allmen, 2004; Cole, 2001; Cook & Ludwig, 2002; Forman, 2002; Hahn et al., 2005; Kellermann, 2004).

Despite pleas from health authorities and emergency room physicians for restrictive gun laws and regulations to protect the public (Adibe, Caruso, & Swan, 2004; Gugala & Lindsey, 2003; Kellermann, 2004; Reilly, 2003; Richmond et al., 2004), bans on assault weapons and high-caliber ammunition have been overturned or allowed to expire, existing trigger lock mandates and restrictions on firearm marketing and sales have been struck down by state appeals courts around the country, and plans proposing weapons registration for high-risk gun-owners have been defeated (Ackermann, 2003; Saylor, Vittes, & Sorenson, 2004; Teret & Culross, 2002; Wintemute, 2002). Concurrently, fear of violence has escalated among Americans of all socio-demographic descriptions, and

citizens have been encouraged by their government to take a vigilant, defensive stance against the potential presence of terrorists in their communities (Seltzer, 2002). Although conclusive epidemiological data for 2001-2004 are not yet available, it is expected that rates of pediatric gun injury will have sharply increased — commensurate with both crime-related and fear-related gun ownership and use (Campbell et al., 2004; Eber et al., 2004; Johnson et al., 2004), as well as loosened restrictions on high-caliber weaponry (Adibe et al., 2004; Weichenthal & Roberts, 2004).

I. A developmental-ecological systems approach to gun injury:

The presence of a gun is the only commonality in all gun injury events, so reductions in the number of guns in the general population would be expected to most broadly reduce gun injuries regardless of age or other situational variables, as has been proposed (Bauer, Grinshpoon, Garashonvinski, Kalian, & Mester, 2003; CDC, 1997, 2000; Cole, 1999; Eber et al., 2004; Hardy, 2002a; Helmuth, 2000; Johnson et al., 2004; Kellermann et al., 2000; Krug, Dahlberg, & Powell, 1996; K. E. Powell et al., 1998; Rosengart et al., 2005). However, the infeasibility of reducing threats to children via legislative mandates has prompted health experts to focus on changing individual behavior in order to protect children from gun injury, despite recognition that behavioral initiatives are less likely to be effective (Adler et al., 1995; Berkowitz, 1994; Campbell et al., 2004; Hardy, 2002a; Himle, Miltenberger, Flessner, & Gatheridge, 2004; Webster, Vernick, Zeoli, & Manganello, 2004; Winett, 1998; Zimring, 2004b)). A focus on large-scale preventions for pediatric gun injury allows the gun injury problem to be simplified in that variations in gun injury behaviors across development are irrelevant in the absence of guns. Given that there will always be guns in circulation, albeit at variable levels, preventing injuries requires an understanding of the trajectories leading to gun injury and the individual phenomenology of pediatric gun injury events (Christoffel, 2000b).

Pediatric gun-injury incidents are highly variable phenomena. Children, like all people, can only be injured in the settings and situations in which they behave. Across

development, children will be engaged in activities at home, at school, and in their communities, with their families, peers, and neighbors. It stands to reason that gun activity in any of a child's major ecological systems will increase a child's likelihood of gun injury. Among the important contributions to recent gun injury research are well-designed demonstrations of a close association between variations in the prevalence of guns at many system levels and variations in gun injury rates to children.

The prevalence of guns at larger system levels is very closely associated with variations in gun injury rates to children (Arnett, 2002; Bauer et al., 2003; CDC, 1997, 2000; Price, Thompson, & Dake, 2004). For example, comparisons of populations in the U.S. and Canada indicate that children in Missouri are 100 times as likely as children in Ontario to be killed by guns, despite extreme similarity on a host of socio-demographic variables other than the prevalence of guns in their communities, including non-gun-related crime, population density, racial distribution, and SES (Hackam et al., 2004). And even within the United States, analyses indicate that variability in the prevalence of firearms between the states accounts for almost half the variability in rates of gun mortality among U.S. children and adolescents (CDC, 2000; Eber et al., 2004; Miller, Azrael, & Hemenway, 2002c; Murnan, Dake, & Price, 2004). Furthermore, the prevalence of guns in children's communities, neighborhoods, and schools is related to their risk of gun-injury (Arnett, 2002; CDC, 2003; Eber et al., 2004; Hemenway, 2002; Hemenway, Kennedy, Kawachi, & Putnam, 2001; Marcin, Schembri, He, & Romano, 2003; Simon, Khan, & Delgado, 2002). But most important, recent research has demonstrated that within all regions, states, communities, and socio-demographic groups, the presence of guns in children's homes increases their risk of gun injury, and that having multiple guns at home increases this risk even more (Eber et al., 2004; Hemenway & Miller, 2002; Johnson et al., 2004; Miller, Azrael, & Hemenway, 2002b; Wiebe, 2003a).

Gun availability, prevalence, or exposure at multiple levels of the child's ecological system would be expected to increase a child's risk of gun injury beyond the level of risk

entailed by gun prevalence at fewer levels of the system. Thus, children who live in high-crime inner-city neighborhoods in southern U.S. states, attend schools with high rates of weapon-carrying, and whose family members are aggressively and/or defensively gun-involved (Hemenway & Azrael, 2000; Komro et al., 1998; Molnar, Miller, Azrael, & Buka, 2004; Vacha & McLaughlin, 2004) would be expected to be at particularly high risk from an ecological systems perspective. Indeed, these children, who are exposed to many incidents in which gun injury is possible at several ecological systems levels, are disproportionately injured in violent gun incidents (Fingerhut & Christoffel, 2002; Loeber et al., 1999).

However, the diversity of gun injury events applies particularly to the settings in which gun injuries occur. Although gun violence disproportionately affects poor children of color, gun injury is by no means limited to economically disadvantaged members of minority racial groups living in urban areas (Branas, Nance, Elliott, Richmond, & Schwab, 2004; Komro et al., 1998; Miller, Hemenway, & Wechsler, 2002; Nance et al., 2002; K. Slovak & Singer, 2001; Svenson, Spurlock, & Nypaver, 1996). Gun injury affects children at all socio-economic levels in rural, suburban, and urban areas across the country (Eber et al., 2004; Fingerhut & Christoffel, 2002). In fact, gun ownership may be most prevalent among middle-class parents (Drongowski, Smith, Coran, & Cullen, 1998; Johnson et al., 2004; Vacha & McLaughlin, 2004), and children of all socio-economic groups are at increased risk for gun injury if their parents own guns, especially if they store them unsafely (Eber et al., 2004; Fingerhut & Christoffel, 2002; Johnson et al., 2004).

Long guns are consistently more prevalent in rural areas (Dresang, 2001; Nance et al., 2002), and in some states handguns are as prevalent in rural/suburban areas as in urban areas (Connor, 2005). Furthermore, rural adolescents are at increased risk for firearm suicide relative to urban adolescents (Azrael, Hemenway, Miller, Barber, & Schackner, 2004; Dresang, 2001; Johnson et al., 2004), although similar risk factors pertain to both groups (Azrael et al., 2004; Dresang, 2001; Johnson et al., 2004) and the lethality of gun

suicide attempts among teenagers is 95% regardless of rural or urban location (Grossman et al., 2005). Unintentional firearm injuries to children are also more prevalent in rural areas (Dresang, 2001; Eber et al., 2004; Grossman et al., 2005; Nance et al., 2002), although unintentional gun injuries affect children in all types of communities (Eber et al., 2004; Nance et al., 2002), and are similarly lethal (52%) across geographic groups (Fingerhut & Christoffel, 2002; Grossman et al., 2005). And although urban, African-American adolescents are at highest risk for gun homicide and assault overall (Dresang, 2001; Fingerhut & Christoffel, 2002; Nance et al., 2002), multiple-victim intentional shootings at schools are most likely to be perpetrated by white adolescent males (mean age 15) from middle class families in rural areas or cities with fewer than 50,000 residents (Anderson et al., 2001; McGee & DeBernardo, 1999; Miller et al., 2000; Rappaport, 2002; Strasburger & Grossman, 2001; Twemlow, Fonagy, Sacco, Otoole, & Vernberg, 2002).

Rural and suburban children have been neglected by gun injury prevention research efforts relative to urban children (Slovak & Singer, 2001), and examinations of gun injury risk behaviors in non-urban families remain badly needed. Rural children have been found to sustain injuries that reflect their participation in dangerous tasks unique to rural environments, including working with large animals and farm equipment, hunting, and performing these tasks under conditions of low supervision in remote areas (Pryor, Carruth, & LaCour, 2005). Little is known about risk and protective factors for injury within populations of children who engage in these activities. Although some of these rural risks include guns, it is unclear to what extent specific gun behaviors apply to children who live in rural and other non-urban environments.

Another important aspect of the phenomenological complexity of pediatric gun injury events is the role of the child's age or developmental status (Eberle & Maiuro, 2001). Settings and situations in which gun incidents involving children occur vary across developmental time, such that gun injuries to preschoolers are phenomenologically

distinct from gun injuries to adolescents. Gun settings and situations available to children increase as they mature, and rates of gun involvement and gun injury increase across all of childhood (Fingerhut & Christoffel, 2002; Livingston & Lee, 1992; Shapiro, Dorman, Welker, & Clough, 1998). Although published estimates of gun injury rates vary widely with year, geographic location and other socio-demographics, and sampling procedures, gun injury rates always increase with age such that within each sampled population older children are always at greater risk than younger children. Furthermore, the numerous risk and protective factors that may play a role in preventing or potentiating any given gun event, and the child's role in these events, all vary across development. From basic proxy variables like age through to complex transactional variables like parent-child co-regulation of impulsive children's motor behavior during injury-risk tasks, understanding all aspects of how children come to be injured by guns, to injure others with guns, or to avoid gun injury despite high-risk, requires a developmental perspective.

Gun injury risk begins during the fetal period, and gun homicide is a leading cause of death among pregnant women (Chang, Berg, Saltzman, & Herndon, 2005; McFarlane et al., 1998). Fetal gun injury is phenomenologically unique among pediatric gun injuries. While in utero, a developing person obviously can only be a victim and not a perpetrator of gun injury events. For infants and young toddlers, immature cognitive and psychomotor abilities and a restricted range of independent behavior will similarly limit their role in gun injury events, as well as the settings and contexts in which they are injured.

However, risks expand significantly during the pre-school years (Fingerhut & Christoffel, 2002). By age 3, a child developing within normal limits has the requisite motor coordination to grasp and lift a gun and pull its trigger (Sanguino, Dowd, McEnaney, Knapp, & Tanz, 2002), and by age 4 or 5 he is very likely familiar with the concept of a gun as a labeled object in his cognitive repertoire and may well possess numerous imagination-behaviors that involve pretending to shoot a gun. However, he has

not yet learned to distinguish between real guns and toy guns (Hardy, Armstrong, Martin, & Strawn, 1996; Nguyen et al., 2002), and he does not yet understand the finality and irreversibility of death (Peterson & Gable, 1998).

For 5-12 year old children, injuries resulting from exploratory gun behaviors or play with guns account for a large proportion of gun injuries, consistently accounting for about 40-45% of gun fatalities in this age group (Eber et al., 2004; Fingerhut & Christoffel, 2002; Himle et al., 2004; Jostad & Miltenberger, 2004; Thalava & Puttha, 2005). The high rate of this type of gun injury in school-age children is a reflection of children interacting with guns in ways that are afforded by their developmental goals and abilities (i.e., playing with them). This use pattern is reflected also in rates of b.b. gun injury, which increase from age 3 to age 13 and decline precipitously thereafter (Nguyen et al., 2002). Additionally, children may initiate actions in the absence of the thought processes that typically accompany those actions in older members of the culture (e.g., in the case of imitation; Rogoff, 1990; Rogoff, 1993), and there is evidence that children underestimate the danger or risk of injury in common environmental contexts, disagree with their parents about what risks are too great for their abilities, and overestimate their own competence in preventing injury to themselves (Christensen & Morrongiello, 1997; Hyson & Bollin, 1990; Morrongiello, 1997; Peterson, 1989; Sheehy & Chapman, 1985; Schwebel & Bounds, 2003). Furthermore, evidence from research on both general (Pryor et al., 2005) and gun-specific safety behavior (Connor & Wesolowski, 2003; Farah, Simon, & Kellermann, 1999) suggests that many parents of school-age children under-estimate injury risks to their children, over-estimate their children's competence in protecting themselves, and believe their children to have mastered skills the children do not have (Hardy, 2002a; Schwebel & Bounds, 2003; Vacha & McLaughlin, 2000).

As children reach adolescence, their gun injuries reflect increased involvement in broader communities and relationships. Adolescence is a time of rapid role expansion and decreases in parental monitoring and supervision (Luster & Oh, 2001; Miller &

Hemenway, 2004). Children have long been known to behave more safely when aware of being observed by adults than when these observations are made unobtrusively (Rohtengatter, 1981), and more recently a lack of parental supervision and involvement has been found to increase the risk of unsupervised gun handling and gun injury for adolescents (Fingerhut & Christoffel, 2002; Luster & Oh, 2001; Miller & Hemenway, 2004). Furthermore, adolescence is a time of sharp increases in all types of gun involvement, and adolescents are at much higher risk than younger children for involvement in gun injury events as both shooters and victims (Cheng et al., 2001; Eber et al., 2004; Fingerhut & Christoffel, 2002; Paris et al., 2002; Powell, Jovtis, & Tanz, 2001). During adolescence, rates of suicide and homicide, defensive weapon carrying, and non-defensive gun use (hunting, target shooting) increase sharply, and approach adult rates for these behaviors by the end of the teens (Miller & Hemenway, 2004; Powell et al., 2001). In some samples of high-risk urban adolescent males, longitudinal rates of serious injury and death from firearms across adolescence reach 10-25% (Blair, 2002; Loeber et al., 1999). Furthermore, adolescence is a developmental bridge between childhood patterns of gun involvement and injury and adult patterns of gun involvement and injury. At the end of this developmental bridge is a gun-injury problem that dwarfs the childhood problem, with over 700,000 adults sustaining gun shot wounds each year (Coben & Steiner, 2003; Powell et al., 2001). Thus, studying adolescent gun behavior is potentially valuable in preventing grisly outcomes in young adulthood in addition to adolescence. For this reason and others, gun behaviors in adolescence have been much more extensively researched than gun behaviors in younger children (Lamberg, 2003).

Increases in gun involvement and injury during adolescence are not inconsequential to simultaneous increases in activities like alcohol and other drug use, interpersonal aggression (fighting), risky sexual behavior, school refusal and drop-out, defiance of parental authority and family relationship conflict, gang membership, and criminal activity. Gun involvement by teens has been linked to problematic behaviors in many

studies (e.g., Bergstein, et al., 1996; DuRant, et al., 1997; Estell, Farmer, Cairns, & Clemmer, 2003; King)ery, McCoy-Simandle, & Clayton, 1997; Kingery, Mirzaee, Pruitt, & Hurley, 1991; Kingery, Pruitt, & Heuberger, 1996; Lowry, Powell, Kann, Collins, & Kolbe, 1998; Malek, Chang, & Davis, 1998; Middleman, Faulkner, Woods, Emans, & DuRant, 1995; Paris et al., 2002; Simon, Crosby, & Dahlberg, 1999; Simon, Richardson, Dent, Chou, & Flay, 1998; Steinman & Zimmerman, 2003; Valois, et al., 1995). Additionally, older teens, urban residents, males, and members of minority racial groups report more gun involvement and pro-gun attitudes (Carcilli & Lester, 1998; Kahn, Kazimi, & Mulvihill, 2001; Livingston & Lee, 1992; Luster & Oh, 2001; Paris et al., 2002; Shapiro et al., 1998). These findings have led many to conclude that the gun problem in adolescence is limited to a small number of high-risk youths and is best conceptualized as an aspect of juvenile delinquency or conduct disorder (Berkowitz, 1994; Loeber, Burke, Mutchka, & Lahey, 2004; Valois & McKewon, 1998; Webster, Freed, Frattaroli, & Wilson, 2002; Williams, Mulhall, Reis, & DeVille, 2002; Zimring, 2004a).

However, the issue is complicated by more recent research demonstrating that adolescent gun involvement by teens engaged in other problem behaviors is related to trauma experiences, witnessing gun violence, fear of victimization, family violence, and an increased risk of sustaining a gun injury (Champion & Durant, 2001; Ding, Nelsen, & Lassonde, 2002; Jouriles et al., 1998; Lamberg, 2002; Lane, Cunningham, & Ellen, 2004; Loeber et al., 1999; Luster & Oh, 2001; Miller & Hemenway, 2004; Slovak, 2002; Wilkinson & Fagan, 2001; Wood, 1997; Yexley, Borowsky, & Ireland, 2002). Adolescents who report being threatened with a gun are more likely to be male, to smoke cigarettes, to get in fights, to have gun-owning parents who do not know their whereabouts in the afternoon, and to carry guns (Hemenway & Miller, 2004), and adolescents who carry guns are more likely to be male, to smoke, to have been threatened with a gun, to fight, and to have been hurt during a fight (Hayes & Sege, 2003).

Adolescents wounded by guns are more likely to have gun-owning parents (Johnson et al., 2004; Loeber et al., 1999), to be depressed, to have poor parental supervision, and to have a father with emotional or behavioral problems (Loeber et al., 1999); they are also more likely to carry a hidden weapon and to have been in trouble with the law (Lane et al., 2004; Loeber et al., 1999). Furthermore, adolescent gun homicide offenders have been found to have a recent history of suicidal behavior and a history of being bullied by their peers (Anderson et al., 2001). In one longitudinal sample of teenagers, exposure to firearm violence approximately doubled the probability that an adolescent would go on to perpetrate serious violence over the subsequent 2 years (Bingenheimer, Brennan, & Earls, 2005). Many of these associations have been demonstrated in both rural (Cunningham, Henggeler, Limber, Melton, & Nation, 2000; Slovak, 2002; Slovak & Singer, 2001) and urban (Brener, Lowry, Barrios, Simon, & Eaton, 2004; Cook, 2004; Loeber et al., 1999) samples. These findings have re-focused attention toward alleviating conditions conducive to both sustaining and inflicting gun injuries in adolescence.

Additionally, recent research has demonstrated two distinct forms of adolescent gun involvement—conflict-oriented vs. sports/hunting (Bergstein, Hemenway, Kennedy, Quaday, & Ander, 1996; Cunningham et al., 2000; Lane et al., 2004), only one of which was associated with any elevation in aggression or other problematic behaviors (Cunningham et al., 2000; Lane et al., 2004). That non-delinquent gun behavior in adolescence has now been documented adds substantially to the range of adolescent gun behaviors and attitudes to be examined as developmental outcomes. Although these young people are likely to be at lower risk for sustaining and inflicting aggressive gun injuries than are adolescents with conflict-oriented gun use, adolescents who engage in hunting and sport-related gun activities are at higher risk for unintentional gun injuries relative to adolescents who do not engage in these activities (Miller & Hemenway, 2004). Further research is needed to identify correlates of non-anti-social gun involvement in adolescence and risk-factors for injury within this population. However, initial research suggests that

hunting and sport-related gun behaviors in adolescence are associated with parental participation in hunting and shooting sports, keeping long guns at home, and an increased likelihood of safe gun storage behaviors by parents relative to adolescents with anti-social gun use whose parents keep guns (Cunningham et al., 2000; Lane et al., 2004).

These highly variable adolescent gun attitudes and behaviors constitute developmental outcomes the precursors of which are unknown. Gun behavior is more difficult to study earlier in childhood because of lower rates of gun behaviors and gun injuries (Eber et al., 2004). However, the rapid spike in gun involvement and injury seen in adolescence does not appear out of nowhere—like all behaviors, adolescent gun involvement has developmental precursors that, if identified, may provide opportunities for prevention. Additionally, adolescents and children often live in the same homes, and the separation between research on adolescents and research on children overlooks this aspect of the real familial environments in which gun development occurs (Molnar et al., 2004).

A developmental perspective on pediatric gun injury phenomenology also has important implications for the issue of intentionality in gun injury events (Grossman, Reay, & Baker, 1999; King, 2000; Peterson & Gable, 1998). Even quite young children can—and do—attempt and complete suicides (Eber et al., 2004; Roesler, 1997), and they are victims and perpetrators of homicidal shootings as well (Eber et al., 2004; Kashani, Darby, Allan, Hartke, & Reid, 1997). Although children under 14 use guns in only a third of suicide attempts (Eber et al., 2004), guns are by far the most lethal means of suicide, and represent a clear majority of completed suicides in childhood (Eber et al., 2004; Roesler, 1997; Shenassa, Catlin, & Buka, 2003). However, the assessment of intentionality in pediatric gun fatalities has been a matter of contention, and recent analyses suggest that the rate of unintentional death in intentional shootings may be very high for homicides and suicides involving young children (King, 2000; Schaechter, Duran, De Marchena, Lemard, & Villar, 2003).

Although intentionality is a dichotomous construct in gun injury research, the human motivations that contribute to injury events are not dichotomous but vary as a complex set of continua (Peterson & Gable, 1998). In situations involving interpersonal conflict or self-destructive emotions, people may interact with guns in risky ways with a range of intentions from making threats through intending to kill. People may have mixed feelings or be unaware of the full range of their motivations during emotional crises, making it possible to wish to kill while also intending only to threaten (Kashani et al., 1997; King, 2000), or to commit suicide without a full intention to die (Schaechter et al., 2003; Shenassa, Rogers, Spalding, & Roberts, 2004).

These psychological complexities in the assessment of intentionality pertain particularly to children (Kashani et al., 1997; King, 2000; Schaechter et al., 2003) because intentions and planning behaviors pertinent to gun injury events change radically across development. Other aspects of human development pertinent to intentionality in shooting events include the ability to distinguish fantasy from reality, to understand mortality, and to control behavioral impulses, all of which develop more slowly than the ability to discharge a gun. Directive cognitive processes antecedent to gun injury events, including the goal-setting, cost-benefit analyses, planning, and other decision-making activities engaged in by child shooters, have never been examined. However, the developmental constraints faced by young shooters are likely to include immature planning abilities and other cognitive factors that will limit the child's ability to accurately judge when or how to engage in appropriate or safe gun use. In toddlers and preschoolers these cognitive limitations will be most extreme. However, even in adolescents, safe gun use will be limited by developmentally normative concrete thinking, poor impulse control, and a sense of invulnerability incongruent with a full appreciation of mortality.

Preventing gun injuries to children must take into account broad variations in gun-injury phenomenology, including the setting, the motivational/intentionality context, the child's role in the incident, the ages of the shooter and the victim, the relationship

between the shooter and victim, the process by which the gun came to be in the child's environment, parental behaviors that may have potentiated the immediate incident, and developmental considerations as they pertain to each of these factors.

II. Preventing gun access by children:

Given the level of phenomenological complexity in pediatric gun injury, it is understandable that efforts to prevent gun injury to children have focused on a variable that applies very broadly to pediatric gun injury events: children's unsupervised access to guns. Supervised or parent-sanctioned gun access by children has not been examined in gun injury prevention research. However, unsupervised child access to guns has been implicated in about 14% of unintentional gun injuries to people of all ages (Ismach et al., 2003). To date, individual preventions targeting children's unsupervised gun access have been limited to two types of programs: 1. programs to encourage parents to disarm or lock up their guns, and 2. programs to teach young children how to respond safely if they "find" a gun.

Behavioral interventions targeting children's opportunistic gun behavior, which teach children how to respond safely if they find a gun, have been sharply criticized as obviously ineffective (Hardy, 2002a, 2002b, 2003; Hardy, Armstrong, Martin, & Strawn, 1996; Himle et al., 2004; Vacha & McLaughlin, 2000) and worse than ineffective in that they may encourage parents to rely on children to keep themselves safe from guns (Connor & Wesolowski, 2003). Although behavioral programs are considered to be an improvement over educational programs without behavioral skills rehearsal (Liller et al., 2003), even the best programs to teach children not to play with guns "hold limited promise" for reducing gun access by children (Hardy, 2002a) due to problems with generalizability and ecological validity.

Gun safety Behavioral Skills Training (BST) programs teach children who find a gun to not touch the gun, leave the area, and tell an adult right away. Young children can readily learn to produce these target gun safety behaviors in response to 'finding' planted

guns during behavioral experiments, and most children aged 3 to 8 trained in these skills will reliably perform them for adult observers and in front of video cameras (Gatheridge et al., 2004; Himle et al., 2004; Jostad & Miltenberger, 2004; Miltenberger et al., 2004). However, even proponents of gun safety BST acknowledge that it is unknown how many children would apply their training in the real world (Miltenberger et al., 2004). Even in laboratory studies using less obtrusive observation methods, 50-78% of school-age children handled a planted gun, regardless of training in safe gun behavior and previous admonitions against playing with guns (Hardy, 2002b, 2003; Jackman, Farah, Kellermann, & Simon, 2001). Preschool children show even higher rates of contacting laboratory guns under conditions of unobtrusive observation, and even less responsivity to instructions to not touch them (Hardy, 2002a; Hardy et al., 1996).

Another problem with behavioral interventions that target child gun behavior is that they are typically discussed as though independent of parental gun behavior. In the BST frame of reference, children are not allowed to handle guns, and those who encounter one in their environment are having a novel experience that a nearby caretaker will want to intervene in right away by removing the gun to a safer place. If these contextual assumptions hold true, the behavioral training, even if not necessarily effective, is appropriately targeted. A more difficult and pressing question is how to address the needs of children for whom the assumptions of novel, unexpected contact with guns and the desire of adults to keep guns away from them do not apply, and who therefore will contact guns in situations for which their behavioral training is inappropriate.

Furthermore, many interventions to reduce child dangerous behavior around guns include parents in teaching and practicing BST skills with their children and/or provide parents with gun safety and storage information or recommend that they remove guns from their homes (Himle et al., 2004; Vacha & McLaughlin, 2000, 2004). It is unknown to what extent BST is compatible with the gun-related beliefs and practices of participating families. Additionally, about 89% of parents have been found to believe that their children

would not touch a gun given the opportunity, and most base this conclusion on their children being "too smart" to do something so dangerous (Connor & Wesolowski, 2003). Other studies have similarly found many parents' predictions of their children's gun-access behavior to be inaccurate, with more parents underestimating than overestimating their children's risky behavior (Jackman et al., 2001). No studies have looked at parents' predictions of children responses after the children have been trained by BST programs, in part perhaps because of the focus in these interventions on training children until they reproduce the target responses, often with additional lessons or in-situ training for children who do not respond to initial learning trials. If gun-safety training for children encourages some parents to believe that leaving guns unlocked and loaded is safe now that their children have been trained to not access them, such programs could in fact increase gun injury risks to children.

Perhaps the most serious failing in gun safety training is that it assumes passive gun access on the part of the child. Although children may certainly passively stumble upon a firearm, they may also go looking for one, especially if they know where one can be found. It is unclear what proportion of unsupervised gun access by children is accounted for by opportunistic gun contact vs. deliberately locating a gun. However, children are active agents in their own development (Ford & Lerner, 1992; Rogoff, 1990). Their behavior is purposive, and based on their current goals and abilities (Freel, 1995; Garling & Garling, 1995; Valsiner, 1997). Identifying risk-factors for gun injury must include an understanding of how children vary in their selective and constructive approach to various environmental systems, including, at minimum, an understanding of their motivated behavior in situations in which opportunities for unsupervised gun access exist. Although unsupervised gun access by school-age boys has been related to child variables like a preference for violent media, toys, and games (Garbarino, Bradshaw, & Vorrasi, 2002; Persky, 2004), prevention efforts directed at children's unsupervised gun access behaviors have not addressed gun access as a deliberate, motivated behavior.

Despite a lack of consideration for children's motivations for unsupervised gun access and the parenting context in which unsupervised gun access occurs, these programs to prevent opportunistic gun contact constitute the only attempt to influence any form of child gun behavior. Other types of unsupervised gun behavior by children, including any type of motivated or deliberate gun access, have never been examined in young children. In addition to being motivated by curiosity or a desire to play, unsupervised gun access by children could be motivated by fear or by a wish to defend themselves against threats to their personal safety.

Little is known about children's motivations for accessing guns while unsupervised. In a large sample of students at rural and suburban elementary schools, about 10% of children reported bringing a weapon of any type to school during the last year, and 18% of children reported that they had ever shot a gun without an adult's knowledge (Dennis et al., 2002). Children of gun owners were at increased risk for unsupervised gun access, although not for bringing weapons to school (Dennis et al., 2002). Similarly, about 25% of school-age children report preferring violent TV shows, games, and toys (Garbarino et al., 2002; Persky, 2004) and this preference has been found to be associated with an increased risk of unsupervised gun access in school-age boys of gun-owning parents (Persky, 2004; Ramsey & Pelletier, 2004; Watson & Peng, 1992). However, motivations for these behaviors were not assessed in these school-age samples.

In a large sample of demographically diverse 7th grade students, most students who handled guns without their parents' knowledge reportedly did so for reasons related to protection/threats/revenge, and students whose parents owned guns were more than twice as likely to report unsupervised gun access for these reasons than were students whose parents did not own guns (Bergstein et al., 1996), suggesting that in older children of gun-owners unsupervised gun access often entails aggressive or defensive motivations. Additionally, "protection" is a common reason for parents to keep guns in children's homes, with this motivation applying to 81% of parents in one urban sample of gun-

owners with at least one child under age 6 living at home (Knight-Bohnhoff & Harris, 1998). Nonetheless, defensively motivated gun access at home has never been examined in pre-adolescent children, nor incorporated into gun-injury preventions for young people.

For some types of pediatric gun injury, the child's access to a gun while unsupervised is crucial to potentiating the injury event. In the case of all intentional shootings by children, either self-directed or directed at others, preventing unsupervised gun access is vitally important (Eber et al., 2004). Although addressing motivations for intentional gun injury events will always be necessary given that there are many ways to harm oneself or another person, guns represent a uniquely lethal element in interpersonal conflicts and suicide attempts (Malek, Chang, & Davis, 1998; Miller, Hemenway, & Azrael, 2004; Mollen, Fein, Vu, Shofer, & Datner, 2003; Shenassa et al., 2004; Trunkey, 1995). Preventing deliberate, unsupervised gun access by children cannot rely on safety training even when the child's motivations for accessing the gun are exploratory or non-defensive, much less when access is motivated by aggressive or self-destructive urges. Until we learn how to prevent children's motivations for unsupervised access, preventing children from deliberately accessing guns will require making guns unavailable to them. For this protection, children must rely on their parents' behavior.

The American Academy of Pediatrics has long recommended that physicians and other health professionals express concern for the safety of children whose parents keep guns, and advise parents to disarm or, at least, to store their guns unloaded and locked away, in a location separate from ammunition (Cole & Johnson, 2005; Dowd, Sege, Smith, & Wright, 2004; Graff & Robinson, 2001; Slovak, 2002; Vacha & McLaughlin, 2004). This advice is now supported by a wide range of evidence from well-designed research. There have been ample demonstrations that keeping guns at home is dangerous to the people who live there (Azrael et al., 2004; Brent & Bridge, 2003; Dahlberg, Ikeda, & Kresnow, 2004; Grossman et al., 2005; Johnson et al., 2004; Loeber et al., 1999; Miller & Hemenway, 1999; Seltzer, 2002; Shenassa et al., 2004). Guns kept for any reason

increase the risk of suicide, homicide, and unintentional gun injuries for homeowners and their children, and guns kept for protection increase this risk more than guns kept for other reasons (Azrael et al., 2004; Dahlberg et al., 2004; Johnson et al., 2004; Miller, Azrael et al., 2002c; Miller & Hemenway, 1999; Miller et al., 2004; Wiebe, 2003a, 2003c).

For children aged 14 and under, parental gun ownership and unsafe storage practices are factors in 4 of 5 gun injury events (Eber et al., 2004). Adolescents whose parents keep guns at home are at such increased risk of suicide, homicide, and unintentional gun injury that keeping a gun at home has been described as an extreme threat to adolescent safety (Loeber et al., 1999). Additionally, when children use guns to injure others at school, in their neighborhoods, or elsewhere outside their homes, the guns they use very often belong to their parents (CDC, 2003; Eber et al., 2004; Mawson, Lapsley, Hoffman, & Guignard, 2002; Twemlow et al., 2002).

Furthermore, although comparing the relative risks of gun ownership was long hampered by inadequate data on the prevalence of defensive gun use during home intrusion events (Cook & Ludwig, 1998; Denton & Fabricius, 2004; Ikeda, Dahlberg, Sacks, Mercy, & Powell, 1997; Kellermann, Westphal, Fischer, & Harvard, 1995; Seltzer, 2002; Suter, 1996), it is now clear that guns are unlikely to be used to defend oneself and do not increase personal safety in the event of a home intrusion (Azrael & Hemenway, 2000; Hemenway & Azrael, 2000). In fact, guns kept at home are less likely to be used against an intruder than to be stolen and later used in crimes (Seltzer, 2002; Wintemute, Romero, Wright, & Grassel, 2004).

Evidence that keeping guns at home is not protective has grown and solidified over time, thanks to improvements in study methodology and an increased focus on the gun injury problem by public health agencies, and today it is compellingly obvious that the costs of arming one's family exceed the benefits (Azrael et al., 2004; Boylan, 2003; Brent & Bridge, 2003; Cook & Ludwig, 2002; Grossman et al., 2005; Seltzer, 2002).

Furthermore, specific evidence exists supporting the advice that gun-owning parents store their guns unloaded and locked away (Johnson et al., 2004; Vernick et al., 2003; Wiebe & Sorenson, 2002). Adolescents whose parents keep their guns stored unlocked and loaded are at elevated risk of completed suicide as well as unintentional gun injury relative to matched controls whose parents keep their guns stored locked, unloaded, and separate from locked ammunition (Brent & Bridge, 2003; Grossman et al., 2005; Shah, Hoffman, Wake, & Marine, 2000; Shenassa et al., 2004), and safe storage practices also reduce the risk of gun injury for younger children of gun-owning parents (Eber et al., 2004; Johnson et al., 2004).

Nonetheless, guns are present in at least one third of American homes (Johnson et al., 2004; Wiebe, 2003b), and parents are no less likely to keep guns than other adults (Johnson et al., 2004). Among gun-owning parents, rates of storing guns unsafely have ranged from 7% (Nordstrom, Zwerling, Stromquist, Burmeister, & Merchant, 2001) to 79% (Wiley & Casey, 1993), with most studies reporting unsafe gun storage rates of 20-40% (Connor, 2005; Coyne-Beasley, Johnson, Charles, & Schoenbach, 2001; Knight-Bohnhoff & Harris, 1998; Schuster, Franke, Bastian, Sor, & Halfon, 2000; Stennies, Ikeda, Leadbetter, Houston, & Sacks, 1999; Vacha & McLaughlin, 2004). And in a large (N=18,254), nationally representative sample of adolescents aged 12-18, 24.7% reported easy access to guns in their homes (Swahn, Hammig, & Ikeda, 2002).

Handguns and guns kept for protection are associated with the highest rates of unlocked and loaded storage practices (Connor, 2005; Knight-Bohnhoff & Harris, 1998; Nordstrom et al., 2001; Radant & Johnson, 2003). However, lax storage and safety practices are common for both handguns and long guns, in urban, rural, and suburban locations (Brent & Bridge, 2003; Connor, 2005; Grossman et al., 2005), and even among police officers who are parents (56% of a 1995 sample and 34% of a 2001 sample) (Coyne-Beasley et al., 2001; Denno, Grossman, Britt, & Bergman, 1996).

Parental adoption of one or both of these recommended standards (disarming or safe storage) has been the target behavior in a number of intervention studies, all of which have been qualified successes or mitigated failures, depending on one's perspective (Albright & Burge, 2003; Dowd et al., 2004; McGee, Coyne-Beasley, & Johnson, 2003; Oatis, et al., 1999; Price, Bedell, Everett, & Oden, 1997; Wafer & Carruth, 2003). Studies that have combined psycho-education with the provision of safety devices have been among the most successful.

In one large-scale study, Public Service Announcements promoting safe gun storage—and offering a free trigger-lock to any adult gun-owner who called in—aired on the radio across a two-state area for several weeks. About 17% of gun-owning households estimated to have been reached by the announcement took advantage of the offer (Roberto, Meyer, Janan Johnson, Atkin, & Smith, 2002). Although this intervention was effective for only a small proportion of gun-owning families, over 150 gun owners were provided with gun trigger locks to secure previously unlocked weapons in their homes (Roberto et al., 2002).

Similar studies in other states have shown some efficacy in encouraging safe storage behaviors by providing parents with safety devices, but even after intervention many gun-owning parents continued to store their guns unlocked, and handgun owners were particularly reluctant to lock up their guns (Meyer, Roberto, & Atkin, 2003; Sidman et al., 2005; Wafer & Carruth, 2003). The most successful of the studies to include the provision of safety devices to parents was a small-scale study in rural Alaska, in which 38 families who kept more than 2 guns at home were provided with a gun safe and unannounced visits were used to check how many of the safes were being used three months later (Horn, Grossman, Jones, & Berger, 2003). Prior to the intervention, all 38 homes contained 2 or more unsecured firearms, which were most commonly located in entryways, bedrooms, or "throughout the home." After the intervention, 32 of 38 gun safes were found locked with the family's guns inside (Horn et al., 2003). Although the

reasons for this study's unusual rate of compliance with safety recommendations are unknown, the researchers included target families and other community members in pre-intervention study groups to assess feasibility and encourage local involvement.

Studies that have examined the impact of providing parents with psycho-education on the risks guns pose to children have been much less successful. One study that provided risk education to urban families found that few gun-owning parents (20%) would even agree to lock up their guns (Vacha & McLaughlin, 2004). Refusal to lock up guns was strongly related to low income and perceived threats to personal safety, prompting the researchers to conclude that programs must address parental fears in order to be more effective (Vacha & McLaughlin, 2004).

Perhaps most concerning are results of psycho-educational interventions targeting gun-owning parents of adolescents receiving mental health treatment for depression or medical treatment following a suicide attempt. In two small studies of parents receiving counseling by emergency room staff following a non-lethal overdose attempt by their adolescent child, about half of gun-owning parents removed their guns or reduced the guns' accessibility (Kruesi et al., 1999; McManus et al., 1997). Although these results are alarming, the rate of removal of guns for parents not provided with gun-removal advice was 0 for both samples (Kruesi et al., 1999; McManus et al., 1997).

In a somewhat larger investigation (Brent, Baugher, Birmaher, Kolko, & Bridge, 2000), parents (N= 106) of adolescents receiving outpatient mental health treatment for depression were educated on the elevated risk of suicide among depressed adolescents who have access to guns, and gun-owning parents were advised to remove guns from their homes. The rate of compliance with clinicians' recommendations was 26.9%. That is, almost two-thirds of parents refused to remove firearms from the home of their depressed teenager, in spite of the increased risk of suicide conferred on their child by that decision. Further, over the course of a 2-year follow-up, 17.1% of the sample acquired firearms. In this sample, correlates of remaining armed included urban residence, marital

dissatisfaction, and paternal psychopathology. Correlates of gun acquisition were similar to those for refusal to disarm, and included the presence of a male parent in the household and marital dissatisfaction (Brent et al., 2000).

Although the clinicians in the outpatient study were criticized for providing counseling that was "not sufficient to achieve the desired result" (Christoffel, 2000), it is questionable whether recommendations to improve counseling, including better conveying risk to parents, allaying the fears that brought guns into their home, and advising safe storage in the absence of compliance with recommendations to disarm (Christoffel, 2000), would have substantially changed the outcome. These findings remain surprising and disheartening, even with close familiarity, but the resistance parents display to restrictions on their individual gun behavior is consistent with broader cultural resistance to regulatory disarmament already discussed. That is, despite extensive evidence in support of the anti-gun side of the debate, the fact remains that gun owners resist messages to disarm—this resistance is seen both in their individual behavior and in their collective behavior. Most gun-owning parents are not responsive to the message that they need to get rid of their guns (Dowd et al., 2004; Grossman, et al., 1995; Grossman et al., 1999; Shaughnessy, Cincotta, & Adelman, 1999; Webster, Wilson, Duggan, & Pakula, 1992) and perceive disarming the family to be a more dangerous threat to their children than keeping a gun (Hemenway, 1999).

Although researchers have lamented the particularly resistant nature of parental gun behavior, efforts to increase other parental safety behaviors have met similar challenges and failures have been common (Barrios, Runyan, Downs, & B)owling, 2001; DiGuiseppi & Roberts, 2000; Marsh & Kendrick, 1998; Nansel et al., 2002; Pratt, Runyan, Cohen, & Margolis, 1998); Pryor et al., 2005). However, parents may be particularly resistant to health messages about gun behavior. Parents rarely discuss firearm safety with health care professionals (Barkin, et al., 1998; Cassel, et al., 1998; Everett, et al., 1997; Goldberg, et al., 1995; Jones, 1992; Knight-Bohnhoff & Harris, 1998; Patterson & Smith, 1987;

Thompson & Herstein, 1996). Firearms safety education is typically neglected by pediatricians and primary care physicians (Dowd et al., 2004; Laraque, Spivak, & Bull, 2001; Radant & Johnson, 2003; Solomon, Duggan, Webster, & Serwint, 2002; Wagner, 2000; Wheeler, 2000), and recent concerns about increased liability insurance costs for physicians who counsel parents about gun behavior have presented a further barrier to gun injury prevention in medical practices (Paola, 2001, 2003). Furthermore, there is evidence that such counseling is ineffective (Christoffel, 2000a; Grossman et al., 2000; Oatis, Fenn Buderer, Cummings, & Fleitz, 1999; Shaughnessy et al., 1999).

Parents who purchase guns are likely to receive inaccurate and misleading safety information that specifically contradicts the recommendations of the APA both from gun advertisements (Orr, 1997; Vernick, Teret, & Webster, 1997) and from gun dealers (Sanguino et al., 2002). Furthermore, the APA has been accused of demonizing gun-owning parents (Graff & Robinson, 2001). This is of particular concern given that fewer than half of surveyed parents believe it should be within the physician's role to counsel parents on firearm topics such as safe storage (Dowd et al., 2004; Price, Clause, & Everett, 1995; Radant & Johnson, 2003; Shaughnessy et al., 1999) even though parents are accepting of the role of the physician as an expert on child injury prevention in general (Kendrick, Marsh, & Williams, 1995; Nansel et al., 2002; Nelson, Wissow, & Cheng, 2003).

Unfortunately, gun-owning parents' reduced trust in the expertise of the physician may not be misplaced given that physicians have been shown to provide misleading information and advice that is not evidence based (Tomlinson & Sainsbury, 2004), and given that physicians themselves keep firearms at rates only slightly lower than general population rates in their communities (Davant, 2003; Frank & Kellerman, 1999; Guglielmo, 2000; Johnson et al., 2004; Paola, 2001) and themselves may disagree with the counseling guidelines (Cowan, 2000; Fargason & Johnston, 1995; Faria, 2001), especially if they are gun-owners (Becher, Cassel, & Nelson, 2000). Gun-owning parents are likely

to find many sources of information to contradict the AAP's recommendations, including police officers, some 80-92% of whom keep firearms at home for personal protection and who have widely endorsed the belief that trigger-locks so badly reduce the protective function of firearms (Coyne-Beasley et al., 2001; Denno et al., 1996) that they are like "anchors on life jackets" (Coyne-Beasley & Johnson, 2001, p. 200).

III. Understanding family gun behavior:

Some number of parents may own guns without much thought or attachment to them, and these parents may represent the participants in research studies who disarm in response to brief psycho-educational interventions. However, in most cases, advising parents to disarm or lock up their guns without addressing their reasons for gun ownership, patterns of gun use, or barriers to behavior change, will only alienate them. Gun-involved families may be expected to vary a great deal in their gun-related beliefs, attitudes, and values, as well as their gun practices. Studies of the practices of gun-involved families have so far been limited to examinations of gun storage behaviors, and have not addressed other aspects of gun-related parenting.

One of the most counter-intuitive pieces of the gun-injury puzzle is that safety concerns are the primary motivation for keeping guns as well as the primary reason to not keep them. Many Americans believe that having a gun at home will protect them from violence (Miller, Azrael, & Hemenway, 2000; Price, Kandakai, Casler, Everett, & Smith, 1994; Wiebe, 2003b), and "protection" remains the most prevalent reason for keeping a gun at home (Azrael & Hemenway, 2000; Grossman et al., 2005; Price et al., 1995; Vacha & McLaughlin, 2004), carrying a gun (Hassinger, 1983), or owning a gun (Johnson et al., 2004; Morrison, Hofstetter, & Hovell, 1995; Slovak, 2002; Wiebe, 2003b). Keeping a "loaded and ready to shoot" handgun is closely associated with elevated fears of threats to personal safety (Christoffel, 2000; Miller et al., 2000; Morrison et al., 1995; Vacha & McLaughlin, 2004), even though this practice does more to increase threats to personal

safety than perhaps any other behavior believed to be protective (Brent & Bridge, 2003; Shenassa et al., 2004).

Parents who keep guns for protection are particularly reluctant to disarm or reduce the accessibility of their guns. Documented cases even exist of the same handgun unintentionally discharging on two separate occasions, killing a family member each time; even after the first death, the gun owner remained convinced of the gun's protectiveness (Hargarten, 2001; Lee & Nolte, 2001).

Although recent research has recognized that the threats these parents perceive their guns to be protecting them from must be addressed in order to reduce gun access to children in these homes, in many cases high levels of both violence and gun ownership in affected communities (Miller et al., 2000) make it difficult for researchers to identify examples of ecologically valid, adaptive ways of coping with these threats without guns (Fagan & Davies, 2004). Gun violence has a unique conceptual meaning and plays a unique role in neighborhood decline (Cummings, 2000; Fagan & Davies, 2004; Miller et al., 2000). Much like law enforcement officers who respond to the proliferation of weapons used by criminals with increased firepower of their own, law-abiding members of violent communities arm themselves in response to actual or perceived increased gun violence risks, thus creating an escalating proliferation of aggressive and defensive firearm threats that contributes to increased fears of violence in the community (Cummings, 2000; Miller et al., 2000).

However, there is also evidence that adolescents from violent communities over-estimate the prevalence of weapons among their peers (Sorenson & Vittes, 2004), and many parents in less violent communities keep loaded handguns for protection despite low crime rates. Furthermore, in a sample of registered voters in urban areas around the country, the belief that a home is safer with a gun than without a gun was not associated with prior exposure to violence or fear of victimization, but to being male, young, having fewer than 12 years of education, being registered to vote as a Republican, and reporting

low levels of trust in the police for protection (Howard, Webster, & Vernick, 1999). Even in urban samples, parents who keep guns are more likely to have grown up around guns themselves (Knight-Bohnhoff & Harris, 1998). That 81% of the gun-owning parents in this sample kept guns for protection (Knight-Bohnhoff & Harris, 1998) suggests that intergenerational socialization influences likely apply to protective gun behavior. Therefore, it appears that the relationship between crime rates, fear, and keeping a gun for protection is complex and potentially differentially applicable to various populations.

Insensitivity to the cultural dynamics of motivated gun behavior by parents and children is also applicable to families who use guns for recreational purposes. Parents who keep guns for sports and recreation, hunting, or farm work may resent the implication that they are irresponsible parents for involving their children in time-honored family traditions and culturally valued activities. In some areas of the southern U.S., gun ownership in families is normative, that is, more than 50% of parents keep guns at home, especially in rural areas (Drongowski et al., 1998; Nordstrom et al., 2001; Smith, Bramlett, & Smith, 1999) but in some urban areas as well (Knight-Bohnhoff & Harris, 1998). Furthermore, a greater proportion of parents who keep guns for sports and recreation may already store their guns in ways consistent with recommended safety guidelines (Drongowski et al., 1998; Nordstrom et al., 2001; Smith et al., 1999; Vacha & McLaughlin, 2004).

A relationship between keeping guns for shooting sports and criminality or antisocial behavior in adulthood remains undemonstrated (Adair, 1995). Additionally, adolescents involved in shooting sports have been found to be as well-adjusted as non-gun-involved peers and much better adjusted than aggressively and/or defensively gun-involved peers. Similarly, among middle-class urban and suburban elementary school children, children of gun-owners have been found to be indistinguishable from children of non-gun-owners in terms of child adjustment as rated by both parents and teachers (Orpinas, Murray, & Kelder, 1999; Smith et al., 1999). In the already politically charged atmosphere

surrounding gun ownership, health authorities have been accused of marginalizing and pathologizing all gun-owning parents based on the irresponsible behavior of some gun owners (Downs, 2002; Faria, 2001; Graff & Robinson, 2001).

For parents to involve their children in parental gun activities is congruent with theories of development that emphasize children's "apprenticeship" in the thoughts and behaviors of their culture, in which children are instructed in cultural practices via progressively independent and elaborate participation in these practices with adult models (Rogoff, 1990; Rogoff, 1993). By observing others, especially close adults, interacting with cultural objects like guns, and interacting with these relationship partners around and with these objects, children acquire knowledge about them and learn to use them as adults use them (Rogoff, 1990; Rogoff, 1993). Many culturally sanctioned dangerous behaviors are taught in this way to young people in societies around the world, from driving a car to splitting coconuts with a machete. Just as children learn about driving behavior by watching their parents drive as well as by learning skills during driving lessons, acculturative gun-related experiences may include explicit learning episodes, in which the child is being intentionally guided in an activity for the express purpose of teaching him about it, as well as episodes not motivated by an explicit desire to acculturate the child.

Examinations of school-age children who participate in parent-sanctioned gun-related activities have not been conducted, and children who participate in gun sports and hobbies have received little attention from safety experts. However, fewer gun injuries to children occur during unsupervised activities than previously believed (Eber et al., 2004), and preventions to address gun injuries during parent-sanctioned or parent-supervised activities have not been developed (Listman, 2004). While researchers and clinicians focus on reducing children’s access to firearms, parents continue to engage their children in gun-related activities without the benefit of safety guidelines or advice from health care professionals. Pediatricians cannot help parents avoid risks to children's health and safety

from sports and hobbies involving guns, including exposure to potentially toxic levels of lead at shooting ranges (Abudhaise, Alzoubi, Rabi, & Alwash, 1996; Bonanno, Robson, Buckley, & Modica, 2002; Shannon, 1999), hearing damage from repeated exposure to gun-shot noise (Nondahl et al., 2000; Stewart, Pankiw, Lehman, & Simpson, 2002), and serious fall risks from hunters' tree stands (Metz, Kross, Abt, Bankey, & Koniaris, 2004) if they remain focused solely on reducing the child's access to guns.

Nothing is known about how parents teach children safe or unsafe gun behavior. However, it is likely that some gun-involved parents model safer gun behavior than others, and that some parents are better teachers of gun skills and safety than others. Although recent research has demonstrated that children whose parents store guns unsafely are at higher risk of gun injury (e.g., Eber et al., 2004), no examinations have been conducted of the relationship of these storage risks to other gun-related parenting behaviors also known to increase children's risk of gun injury.

In a large (N = 3,145) sample of 10-12-year-old children and their parents, 32% of parents reported that they kept guns at home and 17% kept guns stored unsafely. In this sample, 22% of children reported that they had fired a gun. Variables associated with child gun use included being a boy in a white, middle-class home where there were guns. It is unclear what proportion of these children handled guns with their parents' knowledge or supervision. However, in one sample of gun-owning parents of 4-12-year-olds, some 24% of parents said they would trust their child with a loaded gun (Farah et al., 1999).

Although handling guns in front of children, taking children hunting, and teaching children to shoot are contexts in which numerous gun injuries to children occur (Eber et al., 2004), these behaviors have not been systematically investigated in children under age 10. Similarly, although parental safety training has generally been associated with safer storage practices (Nordstrom et al., 2001; Suter, 1995), training and safe storage are not related in all samples (Hemenway, Solnick, & Azrael, 1995) and neither has been examined in relationship to other family gun behaviors.

Furthermore, parent-sanctioned play with b.b. guns, in addition to being associated with injuries from these devices (Farr & Fekrat, 1998; Hawkins, 2000; Laraque, 2004; Listman, 2004; Nguyen et al., 2002), has been found to be associated with an increased risk of unsupervised and assaultive use of b.b. guns in school-age children (Friedman, Hammond, Cardone, & Sutyak, 1996; Holland, O'Brien, & May, 2004; Nguyen et al., 2002). Similarly, play with toy guns has been associated with aggressive behavior (Cheng et al., 2003; Watson & Peng, 1992) and an increased likelihood of accessing planted guns under experimental conditions (Hardy et al., 1996). Furthermore, although toy gun play was discouraged by over 60% of parents in a sample from several urban and suburban medical clinics, toy gun play was associated with being a white, male child whose father completed the questionnaire in a suburban primary care clinic (Cheng et al., 2003).

Similarly, parent supervisory behavior is obviously pertinent to children's gun access, as well as to preventing injuries that occur during parent-sanctioned child interactions with guns or during parental behavior in the child's vicinity. How parents manage gun risks to children across development, and how they may actively socialize gun injury prevention behaviors, is unknown. However, a sophisticated literature has developed on parental socialization of other injury-prevention practices (Freel, 1995; Garling & Garling, 1995; Morrongiello & Hogg, 2004; Morrongiello & Kiriakou, 2004; Morrongiello, Ondejko, & Littlejohn, 2004; Peterson, Bartelstone, Kern, & Gillies, 1995).

Reduced general unintentional injury risk is related to competent maternal safety behavior (Dal Santo, Goodman, Glik, & Jackson, 2004; Peterson et al., 1995) and increased maternal perceptions of injury risk (Brown, 2004; Rivara, 1995), as well as accurate maternal assessment of children's physical abilities and impulsivity (Schwebel & Bounds, 2003). Additionally, children born to older and better educated mothers are at consistently lower risk of sustaining injuries (Ekeus, Christensson, & Hjern, 2004; Reading, Langford, Haynes, & Lovett, 1999). Furthermore, although supervisory behavior

is related to injury risk, parents rely on numerous child-focused and environment-focused behaviors to prevent injury. Making changes to improve the safety of the environment has been consistently found to be more protective than using strategies related to child behavior to prevent injury (Freel, 1995; Garling & Garling, 1995). In fact, although many parents have been found to shift from removing hazards to teaching and reasoning with children at about age 3, this greatly increases injury risk (Morrongiello et al., 2004).

Most injury prevention research has examined mothers' behavior, and it is unknown to what extent these findings apply to gun injuries. Gun injury is perhaps the most gendered problem in the pediatric injury literature. From playing with toy guns (Cheng et al., 2003) to handling semi-automatic and automatic assault weapons (Eckstein & Cowen, 1998; Hemenway & Richardson, 1997; Wintemute, Wright, Parham, Drake, & Beaumont, 1998), all examined gun-related behaviors are much more prevalent among males than females across all ages and stages of development (AAP, 2000; Bergstein et al., 1996; Dennis et al., 2002; Drongowski et al., 1998; Hallberg, 2000; Hill & Drolet, 1999; Jackman et al., 2001; Knight-Bohnhoff & Harris, 1998; Kodjo, Auinger, & Ryan, 2003; Nordstrom et al., 2001; Shapiro et al., 1998; Stevens et al., 2001; Trent, Van Court, & Kim, 1999; Watson & Peng, 1992). Boys and men are much more likely than girls and women to be injured by guns as well as more likely to injure others with guns (Dennis et al., 2002; Eber et al., 2004; Fingerhut & Christoffel, 2002; Miller, Azrael, & Hemenway, 2002a; Scherzer & Pinderhughes, 2002), and the most common shooter in both intentional and unintentional gun injuries to children under age 14 is a male family member (Eber et al., 2004; Fingerhut & Christoffel, 2002).

Although recent research has focused attention on gun risks to women and girls (Miller, Azrael et al., 2002a), including homicide and nonfatal gun assault of female youth aged 11-18, of pregnant women (Chang et al., 2005; McFarlane et al., 1998), and of women who purchase guns (Wintemute, Parham, Beaumont, Wright, & Drake, 1999), the results of these studies reinforce the conceptualization of gun behavior as a gendered

activity by men. Women who purchase guns have been found to be at increased risk of homicide and gun assault, specifically by a male intimate relationship partner, and in one prospective sample these injuries accounted for 51% of all deaths to women in the first 12 months after they had purchased a weapon (Wintemute et al., 1999). In samples of young female homicide victims, the most likely killer is a close adult male—90% of female homicide victims aged 11-14 are killed by adult men, most often a family member during an argument, and 89% of female homicide victims aged 15-18 are killed by adult men, most likely a much older intimate partner with a criminal record (Coyne-Beasley, Moracco, & Casteel, 2003). Risk-factors identified for homicide in girls aged 11-18 include taking drugs, running away from home, dropping out of school, and dating men with criminal records (Coyne-Beasley et al., 2003). Similarly, in the case of pregnant homicide victims, the killer is overwhelmingly likely to be a male current or former intimate relationship partner (Chang et al., 2005; McFarlane et al., 1998). Furthermore, efforts to restrict the sale of guns to male domestic violence offenders have focused on the extreme risk such sales pose to women and children (McFarlane et al., 1998).

The gendered nature of gun behavior and socialization is further suggested by evidence that fathers are much more likely than mothers to be in charge of the family's guns and gun activities (Coyne-Beasley, Baccaglini, Johnson, Webster, & Wiebe, 2005). Mothers, who are less likely to use the guns in their homes, may be unaware of the storage status of these weapons (Nelson, Powell, Johnson, Mercy, & Grant-Worley, 1999), and in one sample of couples with children almost 17% of mothers were unaware that fathers kept guns in the home (Coyne-Beasley et al., 2005).

Additionally, among gun-owning parents of young children (under age 7), gun storage practices have been found to be unrelated to other child-related safety behaviors, including the use of car seat belts/child car seats, storing poisons safely, keeping a poison control number on hand, having working smoke alarms, and keeping unused electric outlets capped (Coyne-Beasley, McGee, Johnson, & Bordley, 2002; Hendricks &

Reichert, 1996). Given that fathers are more likely to be in charge of gun safety and mothers are more likely to be in charge of other child safety (Coyne-Beasley et al., 2005), the lack of generalizability of general home and child safety behaviors to firearm storage may reflect differential control of these safety behaviors by mothers and fathers. Finally, parents have been found to socialize injury prevention behavior in boys differently than in girls (Freel, 1995; Morrongiello & Dawber, 1998; Morrongiello & Hogg, 2004). Therefore, parenting behaviors related to guns are likely to vary with the sex of the parent and the sex of child, and including fathers in examinations of family gun behaviors will be critical.

Although active socialization of gun-injury risk or protective behaviors in parents remains to be demonstrated, it is likely that parents use variable strategies in managing gun-related risks with their children. In particular, some combination of environmental, supervisory, and rule-based or instructional strategies are likely used by parents to control (or attempt to control) their children's contact with guns. Broadly speaking, some parents may believe in progressively exposing their children to supervised gun experiences, discussing gun safety extensively with their children, and providing children with specific rules consistent with the family's gun storage and use behaviors. This model of gun-related parenting emphasizes supervised exposure and high communication. Given that 25% of one sample of gun-owning parents of 4-12-year-olds reported that they would trust their child with a loaded gun (Farah et al., 1999), a behavior likely to be on the extreme end of the supervised-exposure model, some approximation of this model may be popular among gun-owning families.

In contrast, some gun-owning parents may make guns completely off-limits to their children, and consider it most appropriate to not involve their children in gun-related activities or to teach them gun-related behaviors. This model of gun-related parenting emphasizes low exposure and keeping guns away from children and is likely to be a less acculturative style of gun-related parenting. Given that previous results suggest that as

many as 17% of mothers could be unaware that their male partners keep guns in their homes, for parents to keep guns secret from children does not seem unlikely. Parents who use this low exposure model may be less likely to discuss guns and gun safety with their children, and they may be more likely to hide their guns from their children.

A third possible model of gun-related parenting is one that emphasizes safety by minimizing the number of guns at home, keeping them stored safely, and discussing gun safety often with children but not including them in adults' gun activities or allowing them to handle guns. Although these variables have never been examined together, this model of gun parenting is most congruent with the much-resisted safety guidelines of the American Academy of Pediatrics and therefore seems unlikely to be a popular model among gun-owning parents. However, the relationship between these or any other models of gun parenting and gun storage behaviors or keeping guns for protection is entirely unknown. Indeed, clusters of gun-related parenting behaviors that could suggest parental strategies for managing gun risks in their homes have never been examined.

IV. Study Description, Goals, and Hypotheses.

a. Part I: Gun injury risks in gun-owning and non-gun-owning families.

Recent research has demonstrated that a number of parental behaviors increase the risk of gun injury to pre-adolescent children. Keeping any guns at home is a risk factor for all types of pediatric gun injury, and keeping handguns, keeping guns for protection, and keeping multiple guns all elevate a child's risk of homicide, suicide, and unintentional gun injury even further (e.g., Eber et al., 2004; Hemenway & Miller, 2002; Johnson et al., 2004; Miller, Azrael et al., 2002b; Wiebe, 2003a). Keeping guns unlocked and/or loaded specifically increases the risk of all types of injury for children whose parents keep guns (e.g., Eber et al., 2004; Longjohn & Christoffel, 2004; Nguyen et al., 2002; Odero et al., 2004). Among households with guns, the risk of injury is lowest for children whose parents keep only long guns for hunting and store their guns unloaded in locked cabinets or gun safes separate from ammunition and highest for children whose parents keep

unlocked and loaded "ready to shoot" handguns for protection (Brent & Bridge, 2003; Eber et al., 2004; Grossman et al., 2005; Johnson et al., 2004; Shah et al., 2000; Shenassa et al., 2004). These factors have been demonstrated to increase the risk of gun injury in children from all socio-demographic groups. Furthermore, parental gun ownership and unsafe storage practices are risk factors for unsupervised gun handling by rural pre-adolescent children (Dennis et al., 2002).

Children's involvement in parent-sanctioned gun-related activities, such as hunting, learning to shoot, and cleaning weapons, although much less investigated, has also been demonstrated to increase the risk of unintentional gun injury to young people (Miller & Hemenway, 2004; Pryor et al., 2005), even when the children are supervised by adults or are observing them in these activities (Eber et al., 2004; Hemenway & Miller, 2002; Miller, Azrael et al., 2002b; Wiebe, 2003a).

Keeping any gun at home, keeping multiple guns, keeping guns for protection, keeping hand guns, and keeping guns stored unsafely, as well as children's observation of adult gun activities and their own participation in activities like hunting, shooting, and cleaning weapons, constitute demonstrated risk-factors for gun injury in pre-adolescent children. These risk-factors have not been examined in combination with other aspects of gun-related parenting or family gun behavior, and little is known about individual gun-injury risks to children, especially for children younger than age 10.

Although a broad association between parental gun ownership and child gun injury risk has long been demonstrated, many specific risk factors for pediatric gun injury have only recently been examined. Little is known about patterns of parent and child behavior in gun-involved families, and no published descriptions of parents' approaches to gun-related parenting exist in the literature. However, some aspects of family gun behavior and gun-related parenting not as well demonstrated to increase gun-injury risk in pre-adolescent children constitute probable gun-injury risks based on findings demonstrating an increased risk of gun injury to adolescents or an increased risk of unsupervised gun

access by younger children. These probable risk-factors include a lack of parental gun-safety training, rarely or never discussing gun safety with children, hiding guns from children, allowing children to visit homes where guns are kept (or not knowing the gun status of the homes children visit), and allowing children to play with b.b. guns or other non-powder/air guns. The relationships between these probably-risky parenting behaviors and demonstrated pediatric gun-injury risks have not been examined.

A lack of parental supervision and involvement, as well as low communication with parents about gun-related activities, have been found to increase the risk of unsupervised gun handling and gun injury for adolescents (Fingerhut & Christoffel, 2002; Luster & Oh, 2001; Miller & Hemenway, 2004). Gun-owning parents who rarely discuss gun safety with their pre-adolescent children may be increasing the risk that their children will engage in unsupervised gun behaviors. Similarly, parents who hide guns from their children may be relying on the child's inability to find the gun and/or the child's lack of interest in looking for it to keep the child safe, alone or in combination with barriers to protect him should he find it. Of course, hiding guns from children is expected to be particularly dangerous if hidden guns are kept unsecured or loaded. Research suggests that parents overestimate their children's decision-making maturity about guns, and that parents who expect their children to not contact found guns if given the opportunity are often wrong (Connor & Wesolowski, 2003; Farah et al., 1999; Hardy, 2002a; Jackman et al., 2001; Schwebel & Bounds, 2003; Vacha & McLaughlin, 2000).

Parent-sanctioned play with b.b. guns is dangerous in itself but also constitutes a risk-factor for using these air-guns when unsupervised and for using them as weapons (Friedman et al., 1996; Holland et al., 2004; Nguyen et al., 2002). However, research on air gun injuries has been conducted independently from research on firearms injuries, and the relationship between the use of air guns by children and gun ownership, storage, and parenting behaviors in their families is unknown. However, given that few children can distinguish between toy guns and real guns, children who are allowed to use b.b. guns and

whose parents also keep powder firearms may be more likely to access their parents' weapons.

Having a parent formally trained in gun safety or safe shooting would be expected to confer some protective benefit to children of gun-owners, perhaps via several pathways, including an association with safe storage behaviors and/or better teaching and supervision skills among trained parents who include children in gun-related activities. In general, gun-owning parents who report having completed formal training in gun safety and safe shooting also report higher rates of safe storage behaviors (Nordstrom et al., 2001; Suter, 1995), although this association has not been found in all samples (Hemenway et al., 1995) and does not hold for parents who are police officers (all of whom are trained, and most of whom store loaded handguns in quickly accessible places in their homes). Beyond these demonstrations of a tenuous general association with safer storage practices, gun safety training among parents has not been examined in relationship to their gun behaviors.

Similarly, although a number of children have been injured by guns while visiting homes where guns are kept, and although the American Academy of Pediatrics recommends that parents ask about whether there are guns in the homes where their children play, this variable has been almost entirely unexamined and currently this AAP advice is not empirically supported.

Additionally, several child-focused variables have been proposed as possible risk-factors for gun-injury, including the child having a strong interest in guns, little or no fear of guns, and a preference for violent media. Although the relationship between exposure to media violence and gun-related behavior is complex and continually debated, unsupervised gun access by school-age boys has been related to their preference for violent media, toys, and games (Persky, 2004; Ramsey & Pelletier, 2004; Watson & Peng, 1992). Similarly, young children whose parents report that they have a strong interest in guns and no fear of guns have been found to be more likely to approach planted guns

when observed unobtrusively than have children reported to have less interest in, and more fear of, guns (Hardy, 2002a; Jackman et al., 2001). Child variables like the child's level of interest in guns, fear of guns, and a preference for violent media, toys and games have not been included in examinations of parental gun behavior, but might be expected to interact with parental behaviors in elevating injury risk for children.

Furthermore, although many documented gun-injury risks to children are applicable only to families who keep guns at home, documented gun-injury risks that may apply to children of non-gun-owners include seeing adults handle guns, handling guns, and going hunting/shooting. Similarly, although hiding a gun from a child is a probable gun-injury risk that requires the parent keep a gun at home in order to be applicable, visiting homes where guns are kept and playing with b.b. guns, as well as a lack of parental gun safety training and a lack of gun safety discussions with the parent, could apply to children whose parents do not keep guns at home. Additionally, the three possible risk-factors included here—the child has a strong interest in guns, little or no fear of guns, and prefers violent toys, games, and shows—may apply to children of both gun-owners and non-gun-owners. Information on gun-injury risks in non-gun-owning families is scant, but may provide valuable comparative information and identify missed prevention targets. There is a need for data documenting patterns of injury risk factors in gun-owning and non-gun-owning families as well as a need for closer examinations of risk-reduction strategies in gun-owning families who take various approaches to gun-related parenting.

The purpose of Part I of the study was to describe patterns of gun-injury risks in gun-owning and non-gun-owning families and provide detailed data on gun behaviors and risk factors in a sample of rural and suburban gun-owning families with children aged 5 to 8 years. Risks included in the analyses were 21 items drawn from an extensive parent-report form on behaviors related to gun acculturation and gun-related parenting.

A comprehensive list of gun-injury risks would require the inclusion of a number of relational and emotional items. For example, paternal psychopathology has been found

to predict gun injury in some samples of children of gun owners, as has marital conflict, and domestic violence is an important factor in gun injuries to children. Similarly, emotional problems like aggression and depression in older children have been found to be closely associated with risky gun behavior and intentional gun injury. However, risks involving relationship conflicts and emotional or behavior problems were not included in the study based on a number of considerations. Some items were not included in the original parent report form, and others that were did not apply to this sample, e.g., none of the children had significant externalizing behavior problems.

Risk-factors examined here include 13 demonstrated risk-factors for gun-injury in pre-adolescent children, i.e., any gun at home, any handgun at home, multiple handguns at home, any handgun kept for protection, any long gun at home, multiple long guns at home, any long gun kept for protection, any handgun ever kept unloaded, any handgun gun ever kept unlocked, any long gun ever kept unloaded, any long gun ever kept unlocked, child sees adults handle guns, child handles guns, child goes hunting/shooting. Additionally, 5 gun-related parenting variables that constitute probable risk-factors for gun-injury in pre-adolescent children were included, i.e., any gun location hidden from child, parents keep b.b. guns at home, child visits homes where guns are kept (or parents do not know the gun status of homes where child stays), parents do not have gun safety training, and parents discuss gun safety with child never or rarely. Finally, 3 child-focused variables that constitute possible risk-factors for gun-injury in pre-adolescent children were included, i.e., child has a strong interest in guns, child has no fear of guns, and child prefers violent games and shows.

Part I Hypotheses:

We hypothesized that children of gun-owning parents would have a higher number of endorsed risk factors for gun-injury than children of non-gun-owning parents, that high-risk gun storage behavior would be related to keeping handguns for protection, that most families in this rural middle-class sample would keep long guns for reasons other

than protection, and that children's participation in gun activities like handling guns or going hunting would be related to having multiple long guns at home. As these hypotheses reflect, the primary purpose of Part I of the study was to describe gun-injury risks and related behaviors, and the data presented below are intended to contribute to a developing body of data on parental gun behavior and children's gun-injury risks by providing information on multiple risks in the same children and on aspects of gun-related parenting that go beyond storage.

b. Part II: Children's responses to a home safety crisis scenario.

The purpose of Part II of the study was to develop a scenario and interview method for assessing children's responses to a crisis scenario involving a threat associated with defensive gun use and to identify styles of crisis response with implications for targeted prevention, as well as to identify predictors of competent crisis responding. Few investigations of children's responses to emergencies other than home fire have been conducted, and previous investigations of children's gun-access behavior have not considered the choice to access or not access an available gun as a motivated decision-making behavior. Furthermore, although protection is the most common reason adults keep guns in children's homes, and the most common reason adolescents handle guns, defensively motivated gun behavior in pre-adolescent children has not been examined. Children's responses to this crisis scenario evocative of a home intrusion threat may help to identify styles of crisis response for targeted preventive interventions and emergency response training with broader applicability.

Children listened for 3 minutes to a story and then answered questions about what they would do if they were the child in the story. Children's responses revealed four main behavioral approaches—competent help-seeking, passive, bold, and aggressive/gun. Although many children made competent responses, a substantial number of children made risky responses. Results are discussed in terms of children's motivated decision-making and individualized approaches to the crisis.

Part II Hypotheses:

We hypothesized that children's crisis responses would reflect one of several predetermined styles of approach, and that older children would be more likely to use competent strategies in responding to the crisis. However, our hypotheses were exploratory, in that we wished to identify predictors of competent responding in particular, but also of passive, bold, and aggressive/gun responding, despite little comparative data on which to base expectations of group sizes within the sample or on which to base predictive hypotheses. That is, previous research on children's crisis responding has not included personal safety/defensive gun access scenarios, nor has previous research identified styles of response among children who did not answer competently. Furthermore, rates of competent responses to other injury scenarios vary widely. Therefore, although we hypothesized that all four styles of response would be represented, we were unsure how many children would make each type of response. Therefore, although we hypothesized that boys would be more likely to make aggressive/gun responses, and younger children to make passive responses, we anticipated that the value of the data on these crisis-response groups would be in providing descriptive information on how children respond to a crisis when they do not engage in a target safety behavior like dialing 911.

The common theme in Parts I and II of the study is that in order to encourage safe behavior, whether by young children responding to a crisis or by parents who own guns, we must first understand the behaviors we are trying to change. Recent research has provided invaluable advances to the literature on risks for gun injuries to children, and researchers can now focus on examining gun-injury risk behaviors more closely. The data presented in Part I provide incrementally contributory information on patterns of gun injury risks in a sample of rural and suburban, middle-SES, 5-8-year-old children of gun-owning and non-gun-owning parents, including several risks and parenting behaviors not previously examined in one sample of children.

Although research on children's responses to some emergencies, particularly home fire, has increased substantially in recent years, gaps remain. One such gap concerns information on children's responses to crises that are relevant to gun-injury, including crises that entail threats to the child's safety from a potential attacker when the child is alone and a gun is available. Although very few children gave gun-related responses to our scenario, the scenario was effective in evoking a wide range of responses in a small, socio-demographically homogeneous sample. The data presented here provide evidence for crisis response styles with potential applicability to broader injury prevention and crisis-response training and demonstrate the value in understanding children's crisis response approaches as individually motivated behaviors.

Method

Participants and Recruitment:

Participants were a community sample of 60 parents and their 5-8-year-old children from rural and suburban southwest Virginia. Participants were volunteers who responded to informational flyers posted in public places, distributed at community events, churches, and daycare centers, and distributed electronically via postings to approved lists. In order to encourage participation by gun-owning families, flyers were posted at gun shops, shooting ranges, and distributed at youth shooting and hunting competitions. In order to encourage participation by parents from rural areas, research assistants traveled to rural communities in the area around Blacksburg and Christiansburg, Virginia to post and distribute flyers advertising the study. Participating parents were also encouraged to provide information about the study to their friends; a number of participants were referred by word of mouth.

Inclusion criteria for participation were that the participating adult be the parent or legal guardian of the participating child, the child be between 5 and 8 years old, and the family reside in Montgomery County, Virginia, or one of the counties contiguous to it. The only exclusionary criteria were age and that only one child per family could

participate. Children could not participate more than one week before their 5th birthday, nor could they participate more than one week after their 9th birthday. In cases where two or more children in a family were of eligible age, the youngest child of eligible age participated. The participating parent was not dictated by the researchers before the study appointment, and potential participants were informed that either the child's mother or father could participate. The participating parent was the parent who arrived with the child for the study appointment or was present at home when the research team arrived to administer the protocol. In the few cases in which both parents were at home or both parents arrived with the child, the father participated.

As detailed in the informed consent form, participating parents were given a $20 gift certificate to a major retailer and participating children were allowed to choose a thank-you prize from a selection of small toys. These participation incentives were non-contingent. That is, parents and children received the gift certificate and toy regardless of completion of the study or refusal to answer any questions. Parents were given their certificate at the conclusion of the informed consent procedure; children picked their toy prize at the end of the study or when the procedure was discontinued if participation was incomplete.

Procedure:

Administration was completed at a time and place mutually convenient to the parent and researchers. Protocols were administered by two-researcher teams at families' homes, at the Virginia Tech (VT) Child Study Center, other VT psychology department facilities, and other locations on the VT campus. Participation was completed in one session lasting 30-90 minutes. At the beginning of the session, written parental consent and child assent for participation were obtained. The first member of the research team then remained with the parent while s/he completed a series of questionnaires, and the second researcher administered the child portion of the protocol. Children's interview responses were audio taped for later data coding. At the completion of the child protocol,

the second researcher and the child participant rejoined the parent and the first researcher, and the research team answered the parent and child's questions about participation.

Measures

A. Completed by Parent

1. *Socio-demographic Information Form.* This form provided socio-demographic information on the child and family, including variables used to describe the sample.
2. *Parent Inventory of Child Gun Acculturation.* A detailed, 160-item survey of gun-related behavior, attitudes, and parenting, which provided varied descriptive data on the sample as well as the 21 Brief Inventory of Gun Risks (BIGR) items used in the analyses of gun-injury risks in children of gun-owning and non-gun-owning parents.

B. Completed by Child

1. *"What would you do?" crisis response and gun access scenario and interview.* Children listened to a brief story presenting them with a crisis scenario and opportunities for unsupervised gun access, then answered questions about how they would respond to the crisis. Children's responses were audio-taped and later categorized according to competence and style of response.

Results

Description of Sample:

Sixty parents, including 50 mothers (83.3%) and 10 fathers (16.7%) completed socio-demographic information forms and the Parent Inventory of Child Gun Acculturation (PICGA). On the socio-demographic form, complete data were obtained for all variables (N=60) except for mother's age (N=59) and mother's occupation (N=58). On the PICGA, data were incomplete for several variables (response rates ranged from 49-

60). However, complete data were obtained for all items included in the analyses labeled Brief Inventory of Gun Risks (N=60).

Participating children were 35 boys (58.3%) and 25 girls (41.7%) ranging in age from 5 years, 0 months to 9 years, 0 months, with a mean age of 6.98 years (sd 1.27). Sixteen 5-year-olds (5-0 to 5-11) participated (26.7%), 14 6-year-olds (6-0 to 6-11) participated (23.3%), and 15 7-year-olds (7-0 to 7-11) participated (25%), as well 15 children aged 8-0 to 9-0 (25%). (Two participants turned 9 less than one week prior to participation and were included with the 8-year-olds.) Fifty children were identified as White/Caucasian (83.3%), 5 as Bi-racial (8.3%), 3 as Asian (5%), 1 as African-American/Black (1.7%), and 1 as Hispanic/Latino (1.7%). Thirty-nine (39) children attended public schools (65% of sample), 6 attended private or church schools (10%), 11 were home-schooled (18.3%), and 4 (6.7%) were not in school—these were 5-year-olds who had not yet started Kindergarten.

Children lived in 15 localities, including towns, villages, and rural counties in the area surrounding Virginia Tech. The sample was approximately evenly divided between suburban (N = 32, 53.3%) and rural residents (N = 28, 46.7%). Suburban participants were residents of large towns, including Blacksburg (22), Christiansburg (9), and Radford (1). Rural participants were residents of rural counties in SW Virginia, including Montgomery (11), Giles (6), Floyd (5), Craig (3), and Pulaski (3). The sample was very stable residentially, with only 9 children living in their current residence for one year or less (15%), 10 children living in their current resident for more than a year but less than two years (16.7%), 19 children living in their current residence for 2-5 years (31.7%), and 22 children living in their current residence for more than 5 years (36.7%). Half the sample (53.3%) was comprised of children who had been living in their current homes since before the child's third birthday, including 12 children whose families had been living at their current address since before the child's birth (20%) and 20 families who moved in when the child was an infant/toddler (before age 3; 33.3%).

Almost all participating children were from two-parent households with one or two children. Fifty-one children had two (or more) adults at home (85%, including one child with three adults at home), and 9 children had one adult at home (15%). Participating families reported a range of 1-4 children at home (mean 1.93, sd .76), with half of participating children having one sibling (32 children or 53.3%), 17 having no siblings (28.3%), 9 children having two siblings (15%), and 2 children having three siblings (3.3%). Mothers ranged in age from 25 to 50, with a mean of 36.19 years (sd 5.76 years) at the time of participation. Average age at child's birth, calculated from child's date of birth and mother's age at time of participation, ranged from 19.17 years to 42.75 years, with a mean of 29.18 years (sd 5.39 years). Eleven mothers were 25 years old or younger when the participating child was born (18.4%), 17 were between 25 and 30 (28.3%), 23 were between 30 and 35 (38.3%), and 7 were over 35 (11.6%).

Parents were highly educated. Twenty mothers (33.3%) had advanced graduate degrees, 19 had college degrees (31.7%), 15 had completed some college (25%), 5 were high school graduates (8.3%), and one had not completed high school (1.7%). Twenty fathers (33.3%) had advanced graduate degrees, 12 had college degrees (20%), 20 had completed some college (33.3%), 6 were high school graduates (10%), and one had not completed high school (1.7%). Participating parents reported a range of household incomes with a predominance of upper-middle income households. Only 2 parents reported household incomes of less than $10,000 per year (3.3%), 9 parents reported incomes in the $10-30,000 range (15%), 15 parents reported incomes of $30-50,000 (25%), 12 parents reported incomes of $50-70,000 (20%), 14 parents reported incomes of $70-90,000 (23.3%), and 8 parents reported household incomes of more than $90,000 per year (13.3%).

Nineteen mothers (31.7%) worked as full-time homemakers, 19 worked as university academics/researchers, physicians, attorneys, engineers, or other professionals (31.7%), 11 were self-employed as artists, real estate agents, surveyors, or craftspeople

(18.3%), and 10 worked as supervisors, administrators, teachers, or nurses (16.7%). Additionally, eight of these mothers (13.3%) were graduate (6) or undergraduate (2) students (all student mothers also selected one of the employment options). Nineteen fathers worked as university academics/researchers, physicians, attorneys, engineers, or other professionals (31.7%), 11 worked as supervisors, administrators, teachers, or nurses (18.3%), 7 were graduate students (11.7%), 5 were employed as plumbers, electricians, and contractors (8.5%), 3 were farmers (5%), 2 were firemen (3.3%), 1 was a writer/filmmaker (1.7%), and one father was a full-time homemaker (1.7%). (None of the student fathers also selected one of the employment options.)

Only 6 children never watched television. Most children (37 of 60) watched television four days per week or more often, whereas 16 children watched television 1 to 3 days per week. Most parents (48 of 60) reported that their children watched television for less than 2 hours on a typical school day, and only one parent reported more than 6 hours of TV on a typical school day. Video games were a less common activity in this sample, with half the parents (32 of 60) reporting that their children never play video games and 14 parents reporting that their children play video games one day per week or less often. However, 12 parents reported that their children play video games 4 or more days per week. No child in the sample played video games for more than 2 hours on a typical school day.

Very few parents completely restricted TV programming with guns or shooting (only 7 of 60 parents reported that their children never watch such shows). Many parents reported that their children watch such shows very rarely (22), rarely (6), or sometimes (19). Only 5 parents reported that their children watch TV shows with guns or shooting often (4) or very often (1). However, most children (34 of 60) never played video games with guns and shooting. Most children who ever played such games did so very rarely (12), rarely (1), or sometimes (9), while only 3 children played these games often (1), very often (1), or everyday (1). A few children were reported to often (7) or

very often (2) play imaginary games involving pretend guns and shooting. Children more commonly played these games sometimes (12), rarely (9), very rarely (15), or never (14). Toy guns were prevalent, with only 15 (of 60) parents reporting no toy guns at home (13 of these 15 were non-gun-owners). Most families (28) had 4 or more toy guns, while 17 had 1-3 toy guns. In all, families in this sample kept more than 197 toy guns in their homes.

Parents reported high rates of having discussed with their children how to respond in an emergency, with only two parents reporting that they never discuss emergency responding with their children, and 7 parents reporting that they discuss emergency responding with their children rarely or very rarely. Almost all parents (51 of 59) reported that they believe their children know how to dial 911 for help in an emergency. Somewhat fewer parents reported that their children know their full names, addresses, and telephone numbers (45 of 59. Additionally, substantially fewer parents (27 of 59) reported that they had ever practiced 911 or other emergency response skills (e.g., home fire drill) with their children.

Part I – Gun injury risks in gun-owning and non-gun-owning families:

Although most participating parents (37, or 61.7%) reported keeping no firearms at home, over one-third of the sample was comprised of gun-owning families (23, or 38.3%). Gun-owners in the sample were significantly more likely ($p<.01$) to live in rural areas than were non-gun-owners (gun-owners 73.9% rural vs. non-gun-owners 29.7% rural). Additionally, gun-owning parents had been living in their current residences significantly longer ($p<.01$) than non-gun-owners (gun-owners mean time at residence 75.2 months vs. non-gun-owners mean time at residence 42.3 months), and mothers in gun-owning families were significantly older ($p<.01$) when the participating child was born than were mothers in non-gun-owning families (mean age of mother at child's birth for gun-owners 31.7 years and for non-gun-owners 27.7 years). Of these statistically significant differences, only the difference in rural residency is likely to be conceptually

meaningful. Gun-owning and non-gun-owning families were equivalent on all other socio-demographic variables.

Most parents in this sample (34 of 60) reported that they knew how to shoot. Of these parents, 24 began learning how to shoot when they were children (before age 18), some as young as 3 or 5 years old, while the remaining 10 learned to shoot when they were adults (age 18 and up). A substantial number of parents (23 of 60) reported that they or another adult member of their household had taken a class on gun safety or safe shooting. Interestingly, although many trained parents did keep guns at home (13), 10 parents trained in gun safety did not keep guns at home. Only 3 parents (all gun owners) reported that they were members of gun-related clubs or organizations.

When asked the best age to start teaching a child to shoot, 22 (of 60) parents reported that children should not be taught to shoot or people should wait until after age 18 to learn to shoot (only 3 of these 22 were gun owners), 21 (of 60) responded that the best age varies with the child or is when the child is an adolescent (ages 13-18), and 17 (of 60) responded that the best age to teach a child to shoot is age 12 or younger (with age 5 being the youngest age reported). Most parents (42 of 60) believed that the best age to give a child his/her first gun was "never" or after age 18. However, 10 parents reported that the best age to give a child his/her first gun varied with the child or was during adolescence (age 13-18), and 8 parents reported that the best age to give a child his/her first gun was age 12 or younger (with age 8 being the youngest age given).

Very few parents (6) reported that they had talked with a doctor or other health professional about gun safety; of these 6 parents, 5 were not gun owners.

The Brief Inventory of Gun Risks (see Table 1) is comprised of 21 items, including 13 demonstrated risk-factors for gun injury to children under age 14, as well as 5 probable risk-factors for gun injury and 3 possible risk-factors for gun injury that warrant further investigation. Gun injury risk data from responses to these items by the gun-owning families in the sample (N = 23) are presented in Table 2.

Of 13 demonstrated gun-injury risks, gun-owning parents reported a range of 1-13 risks for their children (mean 6.52). Of 8 less well-demonstrated risks (5 probable and 3 possible), gun-owners endorsed a range of 2-7 risks for their children (mean 4.04). Of all 21 BIGR items, gun-owners endorsed a range of 4-19 risks for their children (mean 10.57).

A median split of the distribution of scores for the 13 demonstrated gun-injury risks (shown in Table 3) produced two groups, one with fewer than 6 of 13 demonstrated risks (lower-risk, n = 11), and one with 6 or more of 13 demonstrated risks (higher-risk, n = 12). Demographic data for children of gun-owners by higher-risk and lower-risk group are presented in Table 4.

Few gun-owning parents (8 of 23) reported that they always store their guns safely, i.e., unloaded in a location that is not quickly accessible. The remaining 15/23 parents in the sample reported that they store at least one firearm loaded, in a quickly accessible location, or both loaded and quickly accessible. Of the 8 parents who reported storing all guns safely, 3 kept only long guns, 2 kept only handguns, and 3 kept both handguns and long guns. Only 2 of these 8 parents kept guns for protection, and 6 of these 8 parents hid the location of their guns from their child. Additionally, only 2 of the children of these 8 parents saw adults handle guns, and only one child of the 8 parents with safe gun storage practices ever handled guns or went hunting/shooting.

Overall, of 20 parents who kept one or more long guns, 6 stored their long guns safely (unloaded and in an inaccessible location such as a locked box or cabinet), 5 stored long guns unloaded but in quickly accessible locations, 2 stored long guns loaded but in inaccessible locations, and 6 parents stored long guns loaded and in quickly accessible locations. Of 16 parents who kept one or more handguns, 5 stored their handguns safely (unloaded and in an inaccessible location), 4 stored handguns unloaded but in quickly accessible locations, 3 stored handguns loaded but in inaccessible locations, and 4 parents stored handguns loaded and in quickly accessible locations.

Ten parents kept guns for protection, of whom only 2 reported safe storage practices for all their guns. In this sample, handguns kept for protection were kept loaded and quickly accessible by 4 parents, quickly accessible but unloaded by 3 parents, loaded but inaccessible by 1 parent, and unloaded and inaccessible by 2 parents. Long guns kept for protection were kept loaded and quickly accessible by 3 parents, quickly accessible but unloaded by 1 parent, loaded but inaccessible by 1 parent, and unloaded and inaccessible by 1 parent. Four (of 10) parents who kept guns for protection hid the location of their guns from their children; 2 of these parents reported keeping their guns unloaded but quickly accessible, and 2 reported their guns to be unloaded and inaccessible. Long guns not kept for protection were stored safely by 6 of 14 parents. Three parents stored non-protection long guns loaded in quickly accessible locations, 4 parents stored non-protection long guns unloaded in quickly accessible locations, and 1 parent stored non-protection long guns loaded in an inaccessible location.

It was common for this sample of children of gun owners to see adults handle guns (16/23). Interestingly, 5 of the 7 gun owners whose children never saw adults handle guns hid the location of some or all of their guns from their children (only 2 children who saw adults handle guns had parents who hid the location of any of their guns from their children). Children who went hunting/shooting (10) and children allowed to handle guns under close supervision (9) were subgroups of children who saw adults handle guns, as would be expected. Parents who handled guns in front of their children were unlikely to consistently store their guns unloaded and locked (14 of 16 stored a gun loaded and/or quickly accessible), and parents of children who handled guns were very unlikely to demonstrate safe gun storage behaviors (8 of 9 stored a gun loaded and/or quickly accessible). In fact, of the few parents who demonstrated safe storage (8), only 2 involved their children in any gun-related activities, and only one allowed the child to handle guns. Parents of children who handled guns typically discussed gun safety often with their children (6 of 9). However, 2 parents of children who handled guns rarely discussed gun

safety with their children, and one parent never discussed firearm safety with his/her child.

Although a number of these gun-injury risks pertain only to children of gun-owning parents (e.g., storing a gun unsafely requires that one be in the home), it is unclear to what extent gun-ownership and other gun injury risks overlap. For the purpose of comparing the number of known gun-injury risks faced by children of non-gun-owners in a similar socio-demographic and cultural-geographic setting, a subset of 10 gun-injury risks potentially applicable to all children was derived from the 21-item BIGR. Of these 10 risks, 5 entailed a risk related to exposure to guns (e.g., child goes hunting/shooting), whereas the remaining 5 did not entail exposure (e.g., parents do not have gun safety training). Non-exposure risks are likely to be much more risk-elevating for children with exposure risks, including children of gun-owners but also children of non-gun-owners who see adults handle guns, handle guns themselves, go hunting/shooting, or stay over at homes with guns. In the absence of gun-exposure, many variables that elevate risk for gun-exposed children may not increase the risk of gun-injury. Although a strong interest in guns may motivate a child to take full advantage of whatever opportunities for gun exposure are available to him, if guns are never available he will not be injured by one. Summary data for the 10 gun injury risks that do not require parental gun ownership are provided in Table 5 for children of non-gun-owning families in the sample (N = 37).

For children of non-gun-owning parents (N=37), the range of gun-injury risks reported was 0-7 out of 10, with a mean of 2.72 (sd 1.72), whereas for children of gun-owners (N =23), the reported range for the same 10-item set was 1-8, with a mean of 5.09 (sd 2.09). An independent samples t-test indicated that these means are significantly different ($p<.01$). Of 37 children of non-gun-owners, only 19 had any exposure risk. The most common exposure risk was visiting homes where there may be guns (17 children). Other exposure risks were much rarer among children of non-gun-owners, including seeing adults handle guns (8 children), going hunting and shooting (4 children), handling guns (2

children), and keeping bb guns at home (2 children). As in the gun-owning group, children of non-gun-owners who went hunting and shooting or who handled guns were subsets of children who saw adults handle guns.

Part II – Children's defensive crisis responses:

1. Crisis response styles.

Children listened for three minutes to a story read aloud by the examiner (see Appendix G), and then answered questions about it. The story describes a child at home alone at night facing an ambiguous threat (an unknown person in the yard) under spooky conditions. Numerous setting details are provided in the story prior to the crisis (e.g., the doors are all locked, mom's phone number is on the fridge, and the gun in her bedroom is off limits) for the child to draw on in formulating his/her response. Following the presentation of the defensive crisis, children responded to the open-ended question "What would you do?" Their responses to this question constituted their initial crisis response. Children were then asked, "What else could you do instead?" Their responses to this question constituted their second crisis response.

Responses were categorized based on the following criteria: *Optimal responses* were call 911, call police, or call parent(s). *Non-optimal help-seeking responses* included going for help (e.g., run to neighbors' house) or calling anyone for help other than police, parents, or 911 (e.g., friends). *Passive responses* included hiding, crying, staying quiet, watching TV, doing nothing, waiting, ignoring the problem or wishing it away (e.g., "I'd pretend to be a ghost and turn invisible"), shutting blinds or windows, locking the doors (which were already locked in the story), and not knowing what to do. *Investigative responses* included going outside to look around, or approaching the man in the yard to ask him questions, discern his identity, or talk to him, but without telling him to leave or making other confrontative statements or aggressive behaviors. *Confrontative responses* included yelling at the man to go away, telling him to leave, or otherwise approaching him in a confrontative way without overt physical aggression. *Aggressive responses* included

any plan that entailed overt physical aggression against the man, such as hitting him, kicking him, or attacking him with a weapon other than the gun (e.g., "hit him with a stick," "throw ice at him"), as well as plans that entailed accessing a weapon other than the gun without explicit reference to using the weapon (e.g., "get out my karate sticks") or setting traps (e.g., "build a fire in the chimney in case he tries to come in that way"). *Gun-access responses* entailed any plan that included reference to accessing the gun or using it, including getting the gun, hiding with the gun, scaring the man away with the gun, threatening him with it, or shooting him.

Elaborated or compound plans with multiple elements were categorized according to the most dangerous behavior in the plan. For example, one child described an elaborate plan he referred to as "preparing for battle," which involved setting numerous traps, building barricades, getting the gun, and hiding. This plan was categorized as a gun response. Similarly, one child said she would get the phone, carry it outside, call her mother, and then ask the man questions with her mother on the phone. Although this plan contains an optimal behavior (call mom), it was categorized as an investigative response.

Children were assigned to one of four response groups (Competent, Passive, Bold, and Aggressive/Gun) based on consideration of both their crisis-response plans. Most children gave similar plans across both crisis responses. However, assigning group membership based only on first responses would alter group assignment for five participants who gave very discrepant first and second responses. Summary data for the four response groups are provided in Tables 6, 7, and 8.

Children were included in the Competent Responders group if they provided 2 optimal responses, one optimal response and one non-optimal help-seeking response, or one optimal response and one passive response. Responses by children in the Competent Responders group are given in Table 9, and descriptive statistics for the Competent Responders group are given in Table 10.

Children were included in the Passive Responders group if they provided two passive responses, or provided one passive response and one response congruent with elaborated hiding (i.e., setting traps, barricading) without reference to a weapon. Responses by children in the Passive Responders group are given in Table 11, and descriptive statistics for the Passive Responders group are given in Table 12.

Children were included in the Bold Responders group if they provided two responses that entailed investigating, asking the intruder questions, or telling him to leave, or if they made one investigative/confrontative response and one passive response, or if they made an initial investigative/confrontative response followed by an optimal response. Responses by children in the Bold Responders group are given in Table 13, and descriptive statistics for the Bold Responders group are given in Table 14.

Children were included in the Aggressive/Gun Responders group if either of their plans entailed an aggressive or gun response, regardless of the category of the other plan. Responses by children in the Aggressive/Gun Responders group are given in Table 15, and descriptive statistics for the Aggressive/Gun Responders group are given in Table 16.

2. Regression analyses for response groups:

Logistic regression analyses were performed to identify predictors of response group membership. Due to small group sizes, few variables were included in each analysis. Analyses to predict membership in the Competent Responses and Bold Reponses groups produced significant predictive models. Logistic regression models failed to improve prediction of group membership for Passive and Aggressive/gun Response groups. All logistic regression analyses were performed using SPSS 10.0 (SPSS, 2002).

i. Competent Responders.

Logistic regression analysis was performed to predict membership in the Competent Responders group by specifying the child's age in months as the interval/continuous predictor variable and competent response group vs. all other

response groups as the dichotomous categorical outcome variable. Parameterization included internal variable encoding identical to the database variable "dummy" coding for the dependent variable (0=not competent, 1=competent). Without including any predictor variables (i.e., by counting all cases as "not competent"), 61.4% of cases were categorized correctly. This matches the observed percentage of "not competent" cases in the sample, and results in all competent cases being incorrectly classified). Omnibus chi-square tests of model coefficients were significant, as was the predictor variable (child's age) in the regression equation (see Table 17). Including the child's age in the model increased the overall percentage of correctly classified cases to 78.9%. Using age to predict group membership resulted in 30 of 35 not-competent cases being correctly classified (85.7%) and 15 of 22 competent cases being correctly classified (68.2%).

As in linear regression models, in a logistic regression model the estimated raw or unstandardized regression coefficient for a predictor variable (referred to as B) is interpreted as the change in the predicted value of the dependent variable for a one-unit increase in the predictor variable. Thus a B coefficient of 1.0 would indicate that for every unit increase in the predictor, the predicted value of the dependent variable also increases by one unit. In the model above, for every one-unit increase in child age, the predicted value of the dependent variable increases by .093 units. In this binary logistic regression analysis, the dependent variable has two levels (not competent = 0, competent = 1) and consequently one unit between the two to account for in the predictive analysis. The B value is metric-sensitive, and increases when age in months is converted to age in years. However, the increase in the number of cases correctly classified (the improvement in prediction of the outcome variable by including the predictor variable) remains the same.

Older children were more likely to make competent responses, and using age to predict competent responding improves the assignment of competent and not-competent responses from 61.4% to 78.9%.

ii. Passive Responders.

Logistic regression analysis was performed to predict membership in the Passive Responders group by specifying the child's age in months as the interval/continuous predictor variable and passive response group vs. all other response groups as the dichotomous categorical outcome variable. Parameterization included internal variable encoding identical to the database variable "dummy" coding for the dependent variable (0=not-passive, 1=passive). Without including any predictor variables (i.e., by counting all cases as "not passive"), 78.9% of cases were categorized correctly (this matches the observed percentage of not-passive responses in the sample). Despite significant omnibus chi-square tests of model coefficients and a significant B value (shown in Table 18), the predictor variable (child's age) failed to significantly contribute to the predictive model and did not improve the percentage of cases correctly assigned (which remained at 78.9).

iii. Bold Responders.

Multivariate logistic regression analysis was performed to predict membership in the Bold Responders group by specifying the child's age in months as an interval/continuous predictor variable, "child's sex" and "guns at home" as dichotomous categorical predictor variables, and bold response group vs. all other response groups as the dichotomous categorical outcome variable. Parameterization included internal variable encoding identical to the database variable "dummy" coding for the dependent variable (0=not-passive, 1=passive) but opposite for the "child's sex" variable (female=0) and the guns variable

(guns = 0). Without including any predictor variables (i.e., by counting all cases as "not bold"), 80.7% of cases were categorized correctly (this matches the observed percentage of not-bold responses in the sample). Omnibus chi-square tests of model coefficients were significant, and the predictor variables were entered together on iteration 1 of the regression equation (see Table 19). Together, the predictor variables (younger child age, female sex, and guns at home) improved the overall percentage of cases correctly assigned to 84.2% (95.7% of not-bold responses were correctly assigned, and 36.4% of bold responses were correctly assigned).

When age is removed from the analysis, and child's sex and guns at home are entered as the only predictors of bold responding, the regression equation is no longer significant (see Table 20), and the model does not improve the prediction of group assignment.

iv. Aggressive/Gun Responders.

Logistic regression analysis was performed specifying child's sex (0=male) as the dichotomous categorical predictor variable and aggressive/gun response group vs. all other response groups as the dichotomous categorical outcome variable. Parameterization included internal variable encoding identical to the database variable "dummy" coding for the dependent variable (0=not-aggressive, 1=aggressive), but opposite encoding for the categorical predictor variable (male=1). Without including any predictor variables (i.e., by counting all cases as "not aggressive"), 78.9% of cases were categorized correctly (this matches the observed percentage of not-aggressive responses in the sample). Omnibus chi-square tests of model coefficients failed to reach significance. The predictor variable (child's sex) failed to significantly contribute to the model and did not improve the

percentage of cases correctly assigned (which remained at 78.9). See table 21.

v. Linear Regression of Response groups rank-ordered according to competency.

An additional post-hoc analysis of children's crisis responses was conducted by rank-ordering response groups from 1-4 according to competency, with 1 being least competent (aggressive), 4 being most competent (competent/help-seeking), and bold (2) and passive (3) representing responses of intermediate competency. A linear regression analysis of these rank-ordered competency scores was performed with age, gender, rural vs. town residence, and parental gun status (no guns vs. any guns at home) as predictor variables. Of these variables, only age contributed significantly to the model, in the direction of older children having more competent responses. This analysis is presented in Appendix I.

Discussion

Children whose parents keep guns at home are at increased risk of gun injury. Keeping many guns and keeping handguns increase this risk relative to keeping fewer guns and keeping only long guns. Always storing all handguns and long guns unloaded and locked in an inaccessible location reduces children's risk of gun injury in homes where guns are kept. Short of disarming, unloading and locking up guns are the most important things gun-owning parents can do to protect their children from gun injury.

A number of socio-demographic variables are critical to understanding children's gun injury risks, and interpretation of these results must include careful consideration of the socio-demographic characteristics of our small convenience sample (N = 60). This is a predominantly white, well-educated, middle-income, residentially stable sample of two-parent families with 2 children, living in large towns and surrounding rural areas in southwestern Virginia. One parent and one child aged 5-9 participated from each family.

More mothers than fathers participated, and more boys than girls participated. Approximately equal numbers of 5 year olds, 6 year olds, 7 year olds, and 8-9 year olds participated. Most children attended public school, although a substantial minority were home-schooled. None of the parents self-identified as unemployed. Although most children had two employed parents, 30% of mothers (and one father) self-identified as full-time homemakers. Parents reported high rates of discussing emergency responding like dialing 911 or how to escape from a home fire with their children, although few had practiced these safety skills with their children.

Parents reported their children watched a moderate amount of television and rarely played video games. Although very few parents completely restricted all exposure to violent television, in this sample extensive exposure to violent media was very rare and did not differ between gun-owning and non-gun-owning groups. Toy guns, however, were prevalent, with only 15 of 60 parents reporting that there were no toy guns at home. Furthermore, only 2 of 23 gun-owning parents reported no toy guns, while 13 of 37 non-gun-owning parents reported no toy guns.

Twenty-one gun-injury risks, including 13 demonstrated risks, 5 probable risks, and 3 possible gun-injury risks were examined in the gun-owning families in the sample (N=23). A subset of these items, including 3 demonstrated risks, 5 probable risks, and 3 possible risks, which were all items that do not require guns be kept at home in order to apply to children, were examined in the non-gun-owning families in the sample (N=37) for comparison.

Gun-owners were more likely live in rural areas than were non-gun-owners. As expected in a rural, middle-class sample, long-guns kept for hunting and sport-shooting were prevalent. Almost all the gun-owners in this sample of parents kept multiple long guns, and many parents kept both handguns and long guns.

Although safer storage practices have been associated with a number of socio-demographic variables applicable to this sample, including higher income, more education,

and keeping long guns for sports and recreation, parents in this sample were very unlikely to store their guns safely. In this sample of gun-owning parents, 8 of 23 parents reported that they always store their guns unloaded in a location that is not quickly accessible.

However, in this sample it was not unusual for parents to keep guns for protection in addition to other uses, and keeping guns for protection has been associated with unsafe storage practices perceived to increase the utility of the gun in protecting its owner (Connor, 2005; Knight-Bohnhoff & Harris, 1998; Nordstrom et al., 2001; Radant & Johnson, 2003). Ten of 23 parents kept guns for protection; all ten kept handguns for protection, and 6 kept long guns for protection as well. None of the parents who kept only long guns kept them for protection. That is, parents only kept long gun(s) for protection if they also kept handgun(s) for protection. However, in this sample the relationship between handgun ownership and keeping guns for protection was not as strong as would be expected from previous results. In addition to the number of long-guns kept for protection by these parents, it is notable that over one-third of the handgun-owners in the sample (6 of 16) kept handguns only for reasons like sport shooting and collecting, and not for protection.

Furthermore, none of the parents in the sample reported keeping any gun solely for protection; all handguns and long guns were kept for multiple reasons or uses. These findings underscore the need to assess multiple motivations for keeping the same guns, in that studies that present parents with a forced-choice format between protection and other reasons, or that consider only the 'primary' reason for keeping each gun, may underestimate the degree to which protection and other motivations overlap.

Keeping guns for protection suggests that parents believe they face threats to their safety or need to protect themselves, and is an indicator of likely resistance to disarming or locking up guns. Given higher rates of keeping guns for protection in high-crime areas and the observed relationship between a history of victimization and keeping a gun for protection, it is intuitively sensible to conclude that realistic safety concerns often drive

keeping a gun for protection. That is, even if the gun is not in actuality protective, the perception of threat is related to real dangers. However, rarely has owning a gun for protection been studied in a sample at such low risk for home intrusion, theft, or any violent crime.

Although rates of keeping guns for protection were lower in this sample than in many gun-owning samples, it is notable that guns were kept for protection by individuals in this sample at all given that all the residential areas represented have very low crime rates. In this sample of well-educated gun-owning parents in very safe residential areas, many considered keeping handguns (and often long guns as well) for protection worth the risks these guns pose to their children. This finding underscores the need to better understand gun-owning parents' beliefs and fears related to crime, victimization and other threats, and reminds us that variability in gun ownership within communities or areas of similar crime risk is unlikely to be driven by variations in the level of threat faced by individuals within the community. That is, within a given sample, parents who keep guns for protection and parent who do not keep guns for protection have reached discrepant cost-benefit conclusions despite similar levels of threat from community violence and crime victimization.

The number of gun injury risks endorsed by gun-owning parents (N = 23) as applicable to their children varied widely, suggesting that children of gun-owners are at highly variable risk for injury even within a socio-demographically homogeneous sample. Of 13 demonstrated risk factors for gun-injury to pre-adolescent children, parents in this sample endorsed between 1 and 13 risks for their children. All 23 children had at least one risk-factor (either a long gun or handgun at home) because they were selected for inclusion in the gun-owners group based on the report of any gun (either a long gun or handgun) at home.

Twelve of 23 children had 6 or more of 13 demonstrated gun-injury risks (higher-risk families), and 11 of 23 children had fewer than 6 of 13 demonstrated gun-injury risks

(lower-risk families). All 12 children in the higher-risk group saw adults handle guns, whereas only one of 11 children in the lower-risk group ever saw adults handle guns. Similarly, whereas 9 of 12 children in the higher-risk group handled guns, only one of 11 children in the lower-risk group handled guns. Ten of 12 children in the higher-risk group went hunting or shooting, whereas none of the 11 children with fewer than 6 demonstrated risks went hunting or shooting. Furthermore, only one of 12 children in the higher-risk group had parents who stored all guns safely, whereas 7 of 11 children in the lower-risk group had parents who stored all guns safely. Keeping guns for protection was also associated with an elevated number of other demonstrated gun risks. In the higher-risk group, 8 of 12 parents kept guns for protection, whereas in the lower-risk group only 2 of 11 parents kept guns for protection.

These findings suggest that additive gun risks may be closely associated in families, such that high-risk families who kept multiple guns, often of both types, often for protection, and often stored unsafely, also handled guns in front of their children and involved their children in gun-related activities like hunting and shooting. In contrast, lower-risk families who kept fewer guns also more often kept only long guns and rarely kept guns for protection, and more often stored their guns safely. These lower-risk parents were also unlikely to handle guns in front of their children and very unlikely to allow their children to go hunting/shooting or to handle guns.

These findings underscore the fact that children involved in gun-related activities may incur extensive gun-injury risks both from direct exposure to guns and through exposure to unsafe models of gun behavior, including at minimum mismanagement of weapons storage and perhaps less-safe interactions during supervised gun activities as well.

In addition to the 13 parenting behaviors that constitute demonstrated risk factors, we examined five parenting behaviors that constitute probable risk factors for gun injury in pre-adolescents. These included hiding guns from children, rarely or never discussing gun safety with them, parents being untrained in gun safety, keeping air guns (b.b. guns,

paintball guns), and allowing the child to visit homes where guns are kept (or being unaware of the gun status of homes the child visits).

Ten of 23 gun-owning parents reported hiding guns from their children. Interestingly, this behavior was associated with having a lower number of demonstrated risks, in that 7 of 10 parents who reported hiding guns from children were in the lower-risk group. The three parents in the higher-risk group who hid guns from their children kept both handguns and long guns, involved their children in some gun-related activities, and hid only their handguns and not their long guns from their children. None of these parents kept all their guns stored safely. In contrast, 6 of the 7 parents in the lower-risk group who hid guns from their children also stored all their guns safely, did not involve their children in gun-related activities, and kept either handguns or long guns but not both. Although some parents appear to use hiding guns from children as a safety strategy in the context of high-availability and high-exposure, most parents who hide guns from their children do so in the context of low gun-involvement and safer storage practices. However, even in lower-risk families, hiding guns from children is unlikely to be a reliable way to prevent them from accessing them. Hiding guns as a parental safety strategy warrants further investigation to clarify the reasoning behind parents' approaches to hiding guns in the context of other parenting behaviors.

Most gun-owning parents (14 of 23) kept air-powered guns like b.b. guns and paintball guns at home. Keeping air guns was not related to having a higher number of demonstrated risks for gun-injury. We did not evaluate b.b. gun-related behavior beyond an indication of whether b.b. guns were kept at home. However, parents are likely to be highly variable in their storage and supervision behaviors related to b.b. guns, especially given that b.b. guns were present in homes where parents used a range of storage and exposure approaches to managing injury risks from powder firearms.

About half the parents had not completed a course in safe shooting or gun safety (10 of 23). Interestingly, training in this sample was unrelated to the number of documented

gun-injury risks. Although the nature of the training parents had received was not specified, safe storage practices were unrelated to having been trained, even among families who involved their children in gun-related activities and therefore might be expected to need to provide safety training themselves to their children. Additionally, given how few gun-owning parents in the sample endorsed having discussed gun safety with a health professional (1), and how few were members of gun-related organizations or clubs (3), it is unclear where these parents obtain information on how to manage gun risks for their children. How parents develop strategies for managing gun-injury risks and the sources of information they use for gun-related issues warrant further investigation.

One source of such information for gun-owning parents could be other gun-owning parents, friends, or family members. In this sample, 10 of 23 gun-owning parents reported that their children visit or stay at homes where the parents know guns are kept, suggesting that many of these families may have close relationships with other gun-owners.

Of particular concern is the finding that 14 of 23 gun-owning parents rarely or never discussed gun safety with their children. Discussing gun safety was unrelated to whether the parent had been trained in gun safety, but was related to the number of demonstrated gun injury risks. Interestingly, this relationship was in the direction of higher-risk parents being more likely to discuss gun safety with their children. Although interpretation of these results is conjectural, it appears that discussing gun safety with children is related to involving them in gun-related activities as well as to keeping more guns and storing them unsafely. However, it is unknown whether higher-risk parents who often discuss gun safety with their children do so in an attempt to teach competent behavior during gun activities, do so in attempt to prevent unsupervised gun-access in the context of high availability and unsafe storage, or both. Furthermore, 3 children who handled guns had parents who reported rarely or never discussing gun safety with them. It is unknown whether adults other than the parents provided safety instruction to these children during

gun handling, or if these children handled guns without the benefit of any instruction in how to do so as safely as possible.

In contrast, lower-risk parents may not discuss gun safety with their children because they believe it to be unnecessary in the context of safe storage and low exposure, or because they believe that discussing guns with their children could encourage curiosity or interest in accessing the guns. One potentially dangerous aspect of the relationship between gun safety discussions and low-availability/low-exposure parenting strategies is that many of the parents who reported hiding guns from their children also reported not discussing gun safety with them. Given that these parents may be relying on the child's behavior to protect him from injury, a lack of education in safe behavior may increase the child's risk. However, it is unknown what impact, if any, discussing gun safety with children has on their gun-injury risk under different exposure and availability conditions.

In addition to 13 demonstrated gun-injury risks and 5 probable gun-injury risks, we included in our analyses 3 possible gun-injury risks that warrant further investigation. These included the child having a strong interest in guns, the child having little or no fear of guns, and the child preferring violent TV shows and games. Having a strong interest in guns was unusual and was closely related to having a higher number of demonstrated gun-injury risks (6 of 7 children with a strong interest in guns were in the higher-risk group). Thirteen children were described as having little or no fear of guns; 8 of these children were in the higher-risk group. However, a preference for violent toys, shows, and games was unrelated to the number of demonstrated gun-injury risks and was reported for only 3 children, with an additional 4 parents reporting that they did not know whether their children preferred violent games/shows. In other school-age samples about 25% of children have been reported to have a preference for violent TV shows, games, and toys (Wiley & Casey, 1993).

Comparisons of a subset of these gun-injury risks in children of non-gun-owners revealed that children of non-gun-owners face substantially fewer gun-injury risks. This is

especially true for risks that entail exposure to guns (e.g., child handles guns), but holds also for risks that may be expected to have little impact on gun-injury risk under conditions of very low gun availability (e.g., child has strong interest in guns). However, a small number of children of non-gun-owners had exposure-related risks more common among children of gun-owners (e.g., child sees adults handle guns). For these children, gun safety training and other gun-related parenting behaviors are likely to be similarly important as for children of gun-owners. Additionally, a substantial number of children of non-gun-owners reportedly visit homes where there may be guns. Although little is known about this gun-exposure risk, it was broadly applicable to children in this sample. In residential areas where gun-ownership is prevalent, many children of non-gun-owners and gun-owners alike may visit homes where guns are kept. Although parents are encouraged by the AAP to ask about guns in the homes their children visit, it is unlikely many of these parents have received this advice given that only 6 parents in the sample reported that they had ever discussed gun safety with a health professional.

In Part II of the study, we assessed children's responses to a crisis scenario involving a threat associated with defensive gun use and identified styles of crisis response. Few investigations of children's responses to emergencies other than home fire have been conducted, and previous investigations of children's gun-access behavior have not considered the choice to access or not access an available gun as a motivated decision-making behavior. As active agents in their own development, children engage in purposive and goal-directed behavior. Gun access by children constitutes motivated decision-making behavior and must be understood as such. Furthermore, although protection is the most common reason adults keep guns in children's homes, and the most common reason adolescents handle guns, defensively motivated gun behavior in pre-adolescent children has not been examined.

Additionally, children's decision-making in response to threat or crisis must go beyond merely identifying how many children make a safe response. The unsafe

responses children make are not all the same, and targeting prevention efforts will be more effective if we have an understanding of how children respond when they do not produce a target safe response. Children's responses to this crisis scenario evocative of a home intrusion threat may help to identify styles of crisis response for targeted preventive interventions and emergency response training with broader applicability.

Children produced four styles of response to the crisis scenario: Competent, Passive, Bold, and Aggressive/Gun. Competent responders (N=22) gave plans that entailed calling 911, the police, or their parents. Passive responders (N=12) gave plans that predominantly entailed hiding, as well as ignoring the problem, crying, being quiet, turning on lights, shutting blinds, and locking already locked doors. Bold responders (N=11) gave plans that entailed approaching the intruder, usually with the intent of gathering more information or investigating the situation further but sometimes to tell him to go away. Aggressive/gun responders (N=12) gave plans that entailed attacking the man in the yard, with or without a weapon including the gun, or made a gun-related response that did not entail confrontation (e.g., get the gun and go hide with it).

Although still small in size, these groups are as heterogeneous as possible without losing considerable explanatory value. That is, collapsing groups any further would produce excessive heterogeneity within groups in terms of children's response style, strategy, intention, and motivation. Although passive responders did not increase danger to themselves to the same extent as bold or aggressive responders did, passive responses to this crisis scenario are more risky than competent responses. Hiding was the most prevalent passive response. Although hiding may have done little to increase or decrease danger to the child in this scenario, it is a very dangerous response to more common crisis scenarios, particularly home fire, and therefore cannot reasonably be considered conceptually similar to competent responding. Collapsing bold and aggressive groups would be similarly misguided in that bold responders were quite different than aggressive responders in their intent and expectations. Additionally, ignoring the important

conceptual differences between passive, bold, and aggressive responders to form an inclusive group of all less-competent crisis responders is unnecessary in that examining these group differences is already accomplished by comparing competent responders to the remainder of the sample.

Furthermore, although group sizes were too small to allow for elaborate multivariate predictive models, the diversity in responses within the sample that resulted in these small group sizes is consistent with our goal to describe non-competent crisis response styles. Fewer response styles within the sample would have allowed for more predictors to be included in regression analyses to predict response styles. However, the range of responses observed in this small, homogenous sample may provide an indication of the sample sizes that that would be needed to effectively construct models of children's non-competent crisis responding in other studies.

Additionally, the diversity in response style observed here suggests that children evaluated the ambiguously presented threat very differently. Children were active perceivers who constructed meaning in the threat scenario and developed plans that reflected their individual goals. Even passive responders, who took actions that resulted in essentially no change in the level of threat they were facing, were responding to the situation as they construed it. Although our findings cannot address how children develop particular response styles, nor the level of consistency of a style of responding for any given child, these findings suggest that children vary greatly in their constructive approach to developmental challenges. Even children who took very ineffective approaches were acting in ways compatible with their developmental abilities and goals.

Even in this small sample of 5-8-year-olds, competent responding was clearly related to older age. This is not surprising given that self-care is a developmental skill and our scenario assessed the child's ability to act independently to protect himself. We believe that the relationship between older age and competent responding is due in part to older children's greater exposure to crisis response training (call 911 in an emergency) at school

and at home, as well as to the developing capacity to assess threats and respond to them realistically. Additionally, there is some evidence that predictors of non-competent responding may vary with age. For example, that being female and having parents who kept guns were significant predictors of bold responding only when age was included as a predictor in the analysis suggests that age moderates these variables in influencing children's crisis responses. That is, sex and gun ownership are only related to bold responding to a crisis at some levels of the variable age.

An interesting aspect of children's responding that we had not anticipated was the range of imaginative confrontative responses, many of which were more elaborately described than other plans. There is evidence that young children identified as aggressive by their teachers produce much longer and more detailed stories in response to gun-themed prompts than to neutral prompts (Harbin & Miller, 1991). None of the children in our study were identified as having significant problems with aggression or other externalizing behavior by their parents. However, Harbin & Miller's 1991 study is the only published description of children's verbal responses to an open-ended prompt involving a gun, and our results suggest that the elaboration of aggressive and confrontative responses relative to other responses may not be specific to aggressive children but may apply to many children who construct such a response to a threatening scenario.

Although much remains to be learned about how children actively construe and respond to crises, we hope that these results provide some initial indications of the types of non-competent crisis responses children may generate. Although it is unknown to what extent competent responding in itself constitutes a style of response, it seems likely that in many cases competent responders were presenting a learned response plan (call 911 or parents when you need help) that had replaced their earlier, more individually variable, response styles. Identifying such styles of response may allow prevention efforts to be targeted more effectively. For example, children who spontaneously generate hiding

responses when threatened may need to be taught different skills for protecting themselves, and may be at risk for injury in different situations, than children whose responses entail taking matters into their own hands or confronting hazards head-on, especially aggressively.

Getting help from competent adults is a common target safe response parents and other adults want to teach children to make in a wide variety of threat situations. Children whose spontaneously generated response to threat is to not seek help are likely to be at risk in many situations.

Although we grouped children's responses according to categories that seem meaningfully applicable to risk assessment, a number of other categorizations would have been possible. In particular, one alternate approach would entail identifying at what point in the appropriate sequence of behavior children who produce non-competent responses diverged from the trajectory of behaviors that would most clearly lead to safe resolution of the crisis. That is, for some children the problem was in threat assessment, such that the child failed to construe the threatening scenario as a crisis. In this sample, children who diverged from the appropriate response sequence at the initial point of assessing a threat to be present included children who said they would "ignore it," shut the blinds, stay inside, watch TV, or do nothing (all categorized here as passive responses), as well as children who said they would approach the person in the yard in a specifically non-threatened manner, such as the child who said she would "go out and say hi, see who it is, because I bet I know him" and the child who said she would go out to see if the person in the yard was someone who needed help (categorized here as bold responses). In contrast, other children within these response categories, like children in the passive group who said they would hide and children in the bold group who said they would yell at the man to go away, had successfully assessed a threat to be present but responded to it inappropriately.

Similar re-classifications of these responses could be applied for the remaining steps of the sequence, including avoiding contact with the threat, seeking help, doing so by calling, and doing so by calling specific people competent to help (i.e., parents, police). However, the focus of our conceptualization was on the overall approaches taken by children who do not produce the final target response, with an emphasis on styles of approach.

Limitations:

Both parts I and II of the study entailed a number of substantive limitations. As discussed, our sample size was small and precluded a number of comparative and predictive analyses that could help to better define children's crisis response styles and parents' gun-related behavior. Additionally, our sample was a convenience sample and was not selected to be representative of local populations, much less broader ones. It is entirely unknown to what extent our findings may generalize to other samples of gun-owning and non-gun-owning families. However, data from this predominantly white, well-educated, middle-income, rural and suburban sample are more likely to be generalizable to socio-demographically similar populations than to predominantly African-American and Hispanic low-income urban populations. Although these socio-demographic variables are well-known to be meaningful to the study of gun-related behaviors in particular, they are very likely to apply to the less gun-specific aspects of our study as well, including non-gun-specific parenting behaviors and children's crisis responses.

A second set of limitations concerns the selection of gun injury risks to be included in the study. Although the injury risks described here as "demonstrated" have indeed been convincingly documented as increasing the risk of gun injury to pre-adolescent children, they have been examined to varying degrees and have been found to elevate gun-injury risk to varying degrees. For example, storing guns unsafely is better documented, and more risk-increasing, for children than is participating in gun-related

activities. Furthermore, these risks are likely to act together in ways that are much more complicated than a simple additive relationship. That is, although we added up risks and discussed them in terms of additive effects on increasing children's risk of injury, in actuality many of these risks may function differentially in various combinations. Similarly, many unexamined variables are expected to act with the risk-factors we examined to increase or decrease injury risk, including the supervisory behavior of the parents, the emotional and relational functioning of family members, and many other factors.

Gun-related behavior has long been recognized as a gendered activity, and recent data suggest that the role of fathers in family gun risks may be especially pertinent. Given that mothers are typically in charge of most child supervision and home safety issues but fathers are typically in charge of guns and gun-related safety, the parents' relationship may be integral to injury risk. Even when mothers are aware of guns in their children's homes (and they aren't always), elements of co-parenting including communication, supervisory consistency, and agreement about children's abilities, may affect a child's gun injury risk. Furthermore, although about 1 out of 6 participating parents in our study was the child's father, 5 out of 6 were mothers, and our sample was too small to allow for any comparisons based on this variable. We expect that the fathers who participated in our study are unlikely to be typical of gun-owning fathers, and that the challenges of engaging fathers in research will continue to complicate the assessment of gun-injury risks to children.

These limitations constitute only some of the weaknesses of this study. However, we hope that the data presented on gun injury risks in children may further the investigation of family gun behavior by providing initial data on gun-related parenting and patterns of risk-factors in children aged 5-8 living in middle-class, rural and suburban, two-parent households, as well as information on how these risks compare to those for children whose parents do not keep guns. Furthermore, we hope that the data presented

on children's responses to a crisis scenario pertinent to defensive gun behavior will contribute to the study of children's crisis responding by providing initial data on how children respond to a crisis when they do not generate the competent target response. Finally, we hope that these results contribute to the conceptualization of gun injury events as resulting from a complex set of transactional elements that entail a dynamic interplay between motivated parenting behaviors and motivated child behaviors occurring across developmental time.

References

AAP, American Academy of Pediatrics (2000). Firearm-related injuries affecting the pediatric population. Committee on Injury and Poison Prevention. American Academy of Pediatrics. *Pediatrics, 105*(4 Pt 1), 888-895.

Abudhaise, B. A., Alzoubi, M. A., Rabi, A. Z., & Alwash, R. M. (1996). Lead exposure in indoor firing ranges: environmental impact and health risk to the range users. *Int J Occup Med Environ Health, 9*(4), 323-329.

Ackermann, M. J. (2003). Debating gun registration. *Cmaj, 168*(10), 1239-1240.

Adair, H. E. (1995). The correlation between hunting and crime: A Comment. *Society & Animals, 3*(2), 189-195.

Adibe, O. O., Caruso, R. P., & Swan, K. G. (2004). Gunshot wounds: bullet caliber is increasing, 1998-2003. *Am Surg, 70*(4), 322-325.

Adler, K. P., Barondess, J. A., Cohen, J. J., Farber, S. J., Foreman, S., Gambuti, G., et al. (1995). Firearm violence and public health. Limiting the availability of guns. *J Med Assoc Ga, 84*(6), 265-267.

Albright, T. L., & Burge, S. K. (2003). Improving firearm storage habits: impact of brief office counseling by family physicians. *J Am Board Fam Pract, 16*(1), 40-46.

Anderson, M., Kaufman, J., Simon, T. R., Barrios, L., Paulozzi, L., Ryan, G., et al. (2001). School-associated violent deaths in the United States, 1994-1999. *Jama, 286*(21), 2695-2702.

Anglin, D. (1995). Firearm injuries have not only a substantial morbidity and mortality, but also an enormous cost to society. *J Trauma, 38*(3), 464-465.

Annest, J. L., & Mercy, J. A. (1998). Use of national data systems for firearm-related injury surveillance. *Am J Prev Med, 15*(3 Suppl), 17-30.

Arnett, J. C., Jr. (2002). Statistical association between firearm availability and an increased incidence of violent death in children. *J Trauma, 53*(2), 397; author reply 397-398.

Azrael, D., & Hemenway, D. (2000). "In the safety of your own home": Results from a national survey on gun use at home. *Social Science & Medicine, 50*(2), 285-291.

Azrael, D., Hemenway, D., Miller, M., Barber, C. W., & Schackner, R. (2004). Youth Suicide: Insights from 5 Years of Arizona Child Fatality Review Team Data. *Suicide & Life-Threatening Behavior, 34*(1), 36-43.

Barber, C., Hemenway, D., Hargarten, S., Kellermann, A., Azrael, D., & Wilt, S. (2000). A "call to arms" for a national reporting system on firearm injuries. *Am J Public Health, 90*(8), 1191-1193.

Barrios, L. C., Runyan, C. W., Downs, S. M., & Bowling, J. (2001). Pediatric injury prevention counseling: An observational study of process and consent. *Patient Education & Counseling, 44*(2), 141-149.

Bauer, A., Grinshpoon, A., Garashonvinski, A., Kalian, M., & Mester, R. (2003). A comparison of firearms--related legislation on four continents. *Med Law, 22*(1), 105-111.

Becher, E. C., Cassel, C. K., & Nelson, E. A. (2000). Physician firearm ownership as a predictor of firearm injury prevention practice. *Am J Public Health, 90*(10), 1626-1628.

Berg, A. Z. (2001). Preventing firearm injuries. *Jama, 285*(20), 2581.

Bergstein, J. M., Hemenway, D., Kennedy, B., Quaday, S., & Ander, R. (1996). Guns in young hands: a survey of urban teenagers' attitudes and behaviors related to handgun violence. *J Trauma, 41*(5), 794-798.

Berkowitz, L. (1994). Guns and youth. [References]. In L. D. Eron, J. H. Gentry & P. Schlegel (Eds.), *Reason to hope: A psychosocial perspective on violence & youth* (pp. 251-279). Washington, DC: American Psychological Association.

Bingenheimer, J. B., Brennan, R. T., & Earls, F. J. (2005). Firearm violence exposure and serious violent behavior. *Science, 308*(5726), 1323-1326.

Blair, W. C. (2002). Guns and gunshot wounds among teens are an epidemic. *Md Med, 3*(3), 28.

Bonanno, J., Robson, M. G., Buckley, B., & Modica, M. (2002). Lead exposure at a covered outdoor firing range. *Bull Environ Contam Toxicol, 68*(3), 315-323.

Boylan, M. (2003). Gun control in the United States: ethical perspectives for the twenty-first century. *Clin Orthop Relat Res*(408), 17-27.

Branas, C. C., Nance, M. L., Elliott, M. R., Richmond, T. S., & Schwab, C. W. (2004). Urban-rural shifts in intentional firearm death: different causes, same results. *Am J Public Health, 94*(10), 1750-1755.

Brener, N., Lowry, R., Barrios, L., Simon, T., & Eaton, D. (2004). Violence-Related Behaviors Among High School Students--United States, 1991-2003. *JAMA: Journal of the American Medical Association, 292*(10), 1168-1169.

Brent, D. A., Baugher, M., Birmaher, B., Kolko, D. J., & Bridge, J. (2000). Compliance with recommendations to remove firearms in families participating in a clinical trial for adolescent depression. *Journal of the American Academy of Child & Adolescent Psychiatry, 39*(10), 1220-1226.

Brent, D. A., & Bridge, J. (2003). Firearms availability and suicide: Evidence, interventions, and future directions. *American Behavioral Scientist, 46*(9), 1192-1210.

Brown, K. J. (2004). *Prevention of unintentional childhood injuries: The effect of perceived vulnerability on indices of parental home safety behaviors.* U Kansas, US.

Buechner, J. S. (1997). Firearms injuries, 1991-1995. *Med Health R I, 80*(4), 128-129.

Buechter, K. J., Wright, M. J., & Maher, B. (1997). Firearm injury in Orleans parish: a 24-month perspective. *J La State Med Soc, 149*(6), 193-196.

Campbell, B. T., Radisch, D. L., Phillips, J. D., & von Allmen, D. (2004). From gunstore to smoking gun: tracking guns that kill children in North Carolina. *J Pediatr Surg, 39*(12), 1874-1876.

Carcilli, A., & Lester, D. (1998). Attitudes toward gun control in urban and suburban youth. *Psychol Rep, 82*(3 Pt 2), 1402.

CDC, Centers for Disease Control (1997). From the Centers for Disease Control and Prevention. Rates of homicide, suicide, and firearm-related death among children--26 industrialized countries. *Jama, 277*(9), 704-705.

CDC, Centers for Disease Control (2000). From the Centers for Disease Control and Prevention. Nonfatal and fatal firearm-related injuries--United States, 1993-1997. *Jama, 283*(1), 47-48.

CDC, Centers for Disease Control (2003). From the Centers for Disease Control and Prevention. Source of firearms used by students in school-associated violent deaths--United States, 1992-1999. *Jama, 289*(13), 1626-1627.

Champion, H. L., & Durant, R. H. (2001). Exposure to violence and victimization and the use of violence by adolescents in the United States. *Minerva Pediatr, 53*(3), 189-197.

Chang, J., Berg, C. J., Saltzman, L. E., & Herndon, J. (2005). Homicide: a leading cause of injury deaths among pregnant and postpartum women in the United States, 1991-1999. *Am J Public Health, 95*(3), 471-477.

Cheng, T. L., Brenner, R. A., Wright, J. L., Sachs, H. C., Moyer, P., & Rao, M. (2003). Community norms on toy guns. *Pediatrics, 111*(1), 75-79.

Cheng, T. L., Wright, J. L., Fields, C. B., Brenner, R. A., O'Donnell, R., Schwarz, D., et al. (2001). Violent injuries among adolescents: declining morbidity and mortality in an urban population. *Ann Emerg Med, 37*(3), 292-300.

Cherry, D., Runyan, C., & Butts, J. (2001). A population based study of unintentional firearm fatalities. *Inj Prev, 7*(1), 62-65.

Christoffel, K. K. (1999). Firearm-related homicides among teenagers and young adults. *Jama, 281*(4), 323-324.

Christoffel, K. K. (2000a). Commentary: When counseling parents on guns doesn't work: why don't they get it? *J Am Acad Child Adolesc Psychiatry, 39*(10), 1226-1228.

Christoffel, K. K. (2000b). Forests and trees in firearm injury research. *Inj Prev, 6*(4), 275-276.

Coben, J. H., & Steiner, C. A. (2003). Hospitalization for firearm-related injuries in the United States, 1997. *Am J Prev Med, 24*(1), 1-8.

Cole, T. B. (1999). Ebbing epidemic: youth homicide rate at a 14-year low. *Jama, 281*(1), 25-26.

Cole, T. B. (2001). Medical societies unite against firearm injuries. *Jama, 285*(16), 2068-2069.

Cole, T. B., & Johnson, R. M. (2005). Storing guns safely in homes with children and adolescents. *Jama, 293*(6), 740-741.

Connor, S. M. (2005). The association between presence of children in the home and firearm-ownership and -storage practices. *Pediatrics, 115*(1), e38-43.

Connor, S. M., & Wesolowski, K. L. (2003). "They're too smart for that": predicting what children would do in the presence of guns. *Pediatrics, 111*(2), E109-114.

Cook, P. J. (2004). Youths' involvement with guns: motivation vs availability. *Arch Pediatr Adolesc Med, 158*(7), 705.

Cook, P. J., & Ludwig, J. (1998). Defensive gun uses: New evidence from a national survey. *Journal of Quantitative Criminology, 14*(2), 111-131.

Cook, P. J., & Ludwig, J. (2002). The Costs of Gun Violence against Children. *Future of Children, 12*(2), 87-99.

Cowan, D. N. (2000). Docs for guns. *Public Health Rep, 115*(2-3), 108-109; author reply 109-110.

Coyne-Beasley, T., Baccaglini, L., Johnson, R. M., Webster, B., & Wiebe, D. J. (2005). Do partners with children know about firearms in their home? Evidence of a gender gap and implications for practitioners. *Pediatrics, 115*(6), e662-667.

Coyne-Beasley, T., & Johnson, R. M. (2001). Law enforcement officers' opinions about gun locks: anchors on life jackets? *Inj Prev, 7*(3), 200-204.

Coyne-Beasley, T., Johnson, R. M., Charles, L. E., & Schoenbach, V. J. (2001). Firearm storage practices of officers in a law enforcement agency in the South. *Am J Prev Med, 21*(2), 118-123.

Coyne-Beasley, T., McGee, K. S., Johnson, R. M., & Bordley, W. C. (2002). The association of handgun ownership and storage practices with safety consciousness. *Arch Pediatr Adolesc Med, 156*(8), 763-768.

Coyne-Beasley, T., Moracco, K. E., & Casteel, M. J. (2003). Adolescent femicide: a population-based study. *Arch Pediatr Adolesc Med, 157*(4), 355-360.

Cummings, P. (2000). Should your neighbor buy a gun? *Epidemiology, 11*(6), 617-619.

Cunningham, P. B., Henggeler, S. W., Limber, S. P., Melton, G. B., & Nation, M. A. (2000). Pattern and correlates of gun ownership among nonmetropolitan and rural middle school students. *Journal of Clinical Child Psychology, 29*(3), 432-442.

Dahlberg, L. L., Ikeda, R. M., & Kresnow, M. J. (2004). Guns in the home and risk of a violent death in the home: findings from a national study. *Am J Epidemiol, 160*(10), 929-936.

Dal Santo, J. A., Goodman, R. M., Glik, D., & Jackson, K. (2004). Childhood unintentional injuries: Factors predicting injury risk among preschoolers. *Journal of Pediatric Psychology, 29*(4), 273-283.

Davant, C., 3rd. (2003). Why I carry a gun. *Med Econ, 80*(23), 43-44.

Dennis, D., Massie, J. E., Wycoff-Horn, M., Mouzon, L., Pleban, F. T., Monge, E., et al. (2002). Weapon carrying among rural southern Illinois elementary school children. *Journal of Health Care for the Poor & Underserved, 13*(4), 413-424.

Denno, D. M., Grossman, D. C., Britt, J., & Bergman, A. B. (1996). Safe storage of handguns. What do the police recommend? *Arch Pediatr Adolesc Med, 150*(9), 927-931.

Denton, J. F., & Fabricius, W. V. (2004). Reality check: using newspapers, police reports, and court records to assess defensive gun use. *Inj Prev, 10*(2), 96-98.

Dickinson, A. (2000). Mothers against guns. *Time, 155*(20), 36-40.

DiGuiseppi, C., & Roberts, I. G. (2000). Individual-level injury prevention strategies in the clinical setting. *Future of Children, 10*(1), 53-82.

Ding, C. S., Nelsen, E. A., & Lassonde, C. T. (2002). Correlates of gun involvement and aggressiveness among adolescents. *Youth & Society, 34*(2), 195-213.

Dowd, M. D., Sege, R., Smith, G. A., & Wright, J. L. (2004). Firearm injury prevention: failure of gun-safety education. *Pediatrics, 113*(6), 1847-1848; author reply 1847-1848.

Downs, D. (2002). Representing gun owners: Frame identification as social responsibility in news media discourse. *Written Communication, 19*(1), 44-75.

Dresang, L. T. (2001). Gun deaths in rural and urban settings: recommendations for prevention. *J Am Board Fam Pract, 14*(2), 107-115.

Drongowski, R. A., Smith, S. J., Coran, A. G., & Cullen, M. L. (1998). Firearm ownership in households with children. *J Pediatr Surg, 33*(4), 589-593.

Eber, G. B., Annest, J. L., Mercy, J. A., & Ryan, G. W. (2004). Nonfatal and fatal firearm-related injuries among children aged 14 years and younger: United States, 1993-2000. *Pediatrics, 113*(6), 1686-1692.

Eberle, J. A., & Maiuro, R. D. (2001). Introduction and commentary: developmental perspectives on violence and victimization. *Violence Vict, 16*(4), 351-354.

Eckstein, M., & Cowen, A. R. (1998). Scene safety in the face of automatic weapons fire: a new dilemma for EMS? *Prehosp Emerg Care, 2*(2), 117-122.

Ekeus, C., Christensson, K., & Hjern, A. (2004). Unintentional and violent injuries among pre-school children of teenage mothers in Sweden: A national cohort study. *Journal of Epidemiology & Community Health, 58*(8), 680-685.

Estell, D. B., Farmer, T. W., Cairns, B. D., & Clemmer, J. T. (2003). Self-report weapon possession in school and patterns of early adolescent adjustment in rural African-American youth. *J Clin Child Adolesc Psychol, 32*(3), 442-452.

Fagan, J., & Davies, G. (2004). The Natural History of Neighborhood Violence. *Journal of Contemporary Criminal Justice, 20*(2), 127-147.

Farah, M. M., Simon, H. K., & Kellermann, A. L. (1999). Firearms in the home: parental perceptions. *Pediatrics, 104*(5 Pt 1), 1059-1063.

Fargason, C. A., Jr., & Johnston, C. (1995). Gun ownership and counseling of Alabama pediatricians. *Arch Pediatr Adolesc Med, 149*(4), 442-446.

Faria, M. A., Jr. (2001). Should physicians routinely inquire about guns? No: this inquiry is an invasion of privacy. *West J Med, 175*(3), 149.

Farquhar, J. W. (1996). A call to action to stem the epidemic of deaths from the use of firearms. *Prev Med, 25*(1), 87.

Farr, A. K., & Fekrat, S. (1998). Eye injuries associated with paintball guns. *Int Ophthalmol, 22*(3), 169-173.

Fingerhut, L. A., & Christoffel, K. K. (2002). Firearm-related death and injury among children and adolescents. *Future Child, 12*(2), 24-37.

Forman, J., Jr. (2002). Children and Guns: Advocacy Groups Speak Out. *Future of Children, 12*(2), 165-173.

Frank, E., & Kellerman, A. (1999). Firearm ownership among female physicians in the United States. *South Med J, 92*(11), 1083-1088.

Frattaroli, S. (2003). Grassroots advocacy for gun violence prevention: a status report on mobilizing a movement. *J Public Health Policy, 24*(3-4), 332-354.

Freel, K. A. (1995). *The guardians of childhood safety: The role of parents in injury prevention.* U Chicago, US.

Friedman, D., Hammond, J., Cardone, J., & Sutyak, J. (1996). The air gun: toy or weapon? *South Med J, 89*(5), 475-478.

Galland, H. (2000). Children, adolescents, and guns in Louisiana: a thought experiment. *J La State Med Soc, 152*(10), 523-531.

Garbarino, J., Bradshaw, C. P., & Vorrasi, J. A. (2002). Mitigating the Effects of Gun Violence on Children and Youth. *Future of Children, 12*(2), 73-85.

Garling, A., & Garling, T. (1995). Mothers' anticipation and prevention of unintentional injury to young children in the home. *Journal of Pediatric Psychology, 20*(1), 23-36.

Gatheridge, B. J., Miltenberger, R. G., Huneke, D. F., Satterlund, M. J., Mattern, A. R., Johnson, B. M., et al. (2004). Comparison of two programs to teach firearm

injury prevention skills to 6- and 7-year-old children. *Pediatrics, 114*(3), e294-299.
Graff, G. R., & Robinson, D. P. (2001). The AAP and gun control. American Academy of Pediatrics. *Pediatrics, 108*(6), 1391-1392.
Grossman, D. C., Cummings, P., Koepsell, T. D., Marshall, J., D'Ambrosio, L., Thompson, R. S., et al. (2000). Firearm safety counseling in primary care pediatrics: a randomized, controlled trial. *Pediatrics, 106*(1 Pt 1), 22-26.
Grossman, D. C., Mueller, B. A., Riedy, C., Dowd, M. D., Villaveces, A., Prodzinski, J., et al. (2005). Gun storage practices and risk of youth suicide and unintentional firearm injuries. *Jama, 293*(6), 707-714.
Grossman, D. C., Reay, D. T., & Baker, S. A. (1999). Self-inflicted and unintentional firearm injuries among children and adolescents: the source of the firearm. *Arch Pediatr Adolesc Med, 153*(8), 875-878.
Gugala, Z., & Lindsey, R. W. (2003). Classification of gunshot injuries in civilians. *Clin Orthop Relat Res*(408), 65-81.
Guglielmo, W. J. (2000). How many doctors own guns? *Med Econ, 77*(19), 151-152, 157.
Hackam, D. J., Mazzioti, M. V., Pearl, R. H., Mazziotti, G. M., Winthrop, A. L., & Langer, J. C. (2004). Mechanisms of pediatric trauma deaths in Canada and the United States: the role of firearms. *J Trauma, 56*(6), 1286-1290.
Hahn, R. A., Bilukha, O., Crosby, A., Fullilove, M. T., Liberman, A., Moscicki, E., et al. (2005). Firearms laws and the reduction of violence A systematic review. *Am J Prev Med, 28*(2 Suppl 1), 40-71.
Hallberg, J. (2000). Boys and their toys. *Minn Med, 83*(9), 14-17.
Harbin, J., & Miller, D. (1991). Violent play behavior and language of four-year-old boys: The significance of teacher mediation. *Early Child Development & Care Vol 75 Oct 1991, 79-86 Taylor & Francis, United Kingdom*.
Hardy, M. S. (2002a). Behavior-Oriented Approaches to Reducing Youth Gun Violence. *Future of Children, 12*(2), 101-117.
Hardy, M. S. (2002b). Teaching firearm safety to children: Failure of a program. *Journal of Developmental & Behavioral Pediatrics, 23*(2), 71-76.
Hardy, M. S. (2003). Effects of Gun Admonitions on the Behaviors and Attitudes of School-Aged Boys. *Journal of Developmental & Behavioral Pediatrics, 24*(5), 352-358.
Hardy, M. S., Armstrong, F., Martin, B. L., & Strawn, K. N. (1996). A firearm safety program for children: They just can't say no. *Journal of Developmental & Behavioral Pediatrics, 17*(4), 216-221.
Hargarten, S. W. (2001). Three shots, two dead, five errors, one gun: a recipe for prevention? *Ann Emerg Med, 37*(3), 340-341.
Hassinger, J. R. (1983). Attributes of urban environments feared by handgun carriers. *EDRA: Environmental Design Research Association No 14 1983, 113-119 Environmental Design Research Assn, US*.
Hawkins, D. (2000). Backyard paintball play leads to serious eye injuries. *US News World Rep, 129*(6), 52.
Hayes, D. N., & Sege, R. (2003). FiGHTS: a preliminary screening tool for adolescent firearms-carrying. *Ann Emerg Med, 42*(6), 798-807.

Hayes, R., LeBrun, E., & Christoffel, K. K. (1999). Public health surveillance for firearm injuries. *Jama, 282*(5), 429-430.
Helmuth, L. (2000). Has America's tide of violence receded for good? *Science, 289*(5479), 582-585.
Hemenway, D. (1999). Risks and benefits of gun ownership. *Jama, 282*(2), 135-136.
Hemenway, D. (2002). Lethal violence in the schools. *J Health Polit Policy Law, 27*(2), 267-271.
Hemenway, D., & Azrael, D. (2000). The relative frequency of offensive and defensive gun uses: results from a national survey. *Violence Vict, 15*(3), 257-272.
Hemenway, D., Azrael, D., & Miller, M. (2000). Gun use in the United States: results from two national surveys. *Inj Prev, 6*(4), 263-267.
Hemenway, D., Kennedy, B. P., Kawachi, I., & Putnam, R. D. (2001). Firearm prevalence and social capital. *Ann Epidemiol, 11*(7), 484-490.
Hemenway, D., & Miller, M. (2002). Association of rates of household handgun ownership, lifetime major depression, and serious suicidal thoughts with rates of suicide across US census regions. *Inj Prev, 8*(4), 313-316.
Hemenway, D., & Miller, M. (2004). Gun threats against and self-defense gun use by California adolescents. *Arch Pediatr Adolesc Med, 158*(4), 395-400.
Hemenway, D., & Richardson, E. (1997). Characteristics of automatic or semiautomatic firearm ownership in the United States. *Am J Public Health, 87*(2), 286-288.
Hemenway, D., Solnick, S. J., & Azrael, D. R. (1995). Firearm training and storage. *Jama, 273*(1), 46-50.
Hendricks, C. M., & Reichert, A. (1996). Parents' self-reported behaviors related to health and safety of very young children. *J Sch Health, 66*(7), 247-251.
Hill, S. C., & Drolet, J. C. (1999). School-related violence among high school students in the United States, 1993-1995. *J Sch Health, 69*(7), 264-272.
Himle, M. B., Miltenberger, R. G., Flessner, C., & Gatheridge, B. (2004). Teaching safety skills to children to prevent gun play. *Journal of Applied Behavior Analysis, 37*(1), 1-9.
Holland, P., O'Brien, D. F., & May, P. L. (2004). Should air guns be banned? *Br J Neurosurg, 18*(2), 124-129.
Horn, A., Grossman, D. C., Jones, W., & Berger, L. R. (2003). Community based program to improve firearm storage practices in rural Alaska. *Inj Prev, 9*(3), 231-234.
Howard, K. A., Webster, D. W., & Vernick, J. S. (1999). Beliefs about the risks of guns in the home: analysis of a national survey. *Inj Prev, 5*(4), 284-289.
Huston, H. R., Anglin, D., & Eckstein, M. (1996). Drive-by shootings by violent street gangs in Los Angeles: a five-year review from 1989 to 1993. *Acad Emerg Med, 3*(4), 300-303.
Hutson, H. R., Anglin, D., Kyriacou, D. N., Hart, J., & Spears, K. (1995). The epidemic of gang-related homicides in Los Angeles County from 1979 through 1994. *Jama, 274*(13), 1031-1036.
Hutton, M. (1995). Violence in America. Reaching epidemic proportions. *J Fla Med Assoc, 82*(10), 667-668.

Ikeda, R. M., Dahlberg, L. L., Sacks, J. J., Mercy, J. A., & Powell, K. E. (1997). Estimating intruder-related firearm retrievals in U.S. households, 1994. *Violence Vict, 12*(4), 363-372.

Ismach, R. B., Reza, A., Ary, R., Sampson, T. R., Bartolomeos, K., & Kellermann, A. L. (2003). Unintended shootings in a large metropolitan area: an incident-based analysis. *Ann Emerg Med, 41*(1), 10-17.

Jackman, G. A., Farah, M. M., Kellermann, A. L., & Simon, H. K. (2001). Seeing is believing: what do boys do when they find a real gun? *Pediatrics, 107*(6), 1247-1250.

Johnson, R. M., Coyne-Beasley, T., & Runyan, C. W. (2004). Firearm ownership and storage practices, U.S. households, 1992-2002. A systematic review. *Am J Prev Med, 27*(2), 173-182.

Jostad, C. M., & Miltenberger, R. G. (2004). Firearm Injury Prevention Skills: Increasing the Efficiency of Training with Peer Tutoring. *Child & Family Behavior Therapy, 26*(3), 21-35.

Jouriles, E. N., McDonald, R., Norwood, W. D., Ware, H. S., Spiller, L. C., & Swank, P. R. (1998). Knives, guns, and interparent violence: Relations with child behavior problems. *Journal of Family Psychology, 12*(2), 178-194.

Kahn, D. J., Kazimi, M. M., & Mulvihill, M. N. (2001). Attitudes of New York City high school students regarding firearm violence. *Pediatrics, 107*(5), 1125-1132.

Kashani, J. H., Darby, P. J., Allan, W. D., Hartke, K. L., & Reid, J. C. (1997). Intrafamilial homicide committed by juveniles: examination of a sample with recommendations for prevention. *J Forensic Sci, 42*(5), 873-878.

Kellermann, A. L. (2004). Treating gun violence before the 911 call. *Ann Emerg Med, 43*(6), 743-745.

Kellermann, A. L., Fuqua-Whitley, D. S., Sampson, T. R., & Lindenmann, W. (2000). Public opinion about guns in the home. *Inj Prev, 6*(3), 189-194.

Kellermann, A. L., Westphal, L., Fischer, L., & Harvard, B. (1995). Weapon involvement in home invasion crimes. *Jama, 273*(22), 1759-1762.

Kendrick, D., Marsh, P., & Williams, E. I. (1995). General practitioners: Child accident prevention and "The Health of the Nation." *Health Education Research, 10*(3), 345-353.

King, S. R. (2000). Acting on what they (may) know: children's culpability for violent behavior. *J Dev Behav Pediatr, 21*(6), 429-431.

Knight-Bohnhoff, K., & Harris, M. B. (1998). Parent's behaviors, knowledge, and beliefs related to unintentional firearm injuries among children and youth in the southwest. *J Pediatr Health Care, 12*(3), 139-146.

Kodjo, C. M., Auinger, P., & Ryan, S. A. (2003). Demographic, intrinsic, and extrinsic factors associated with weapon carrying at school. *Arch Pediatr Adolesc Med, 157*(1), 96-103.

Komro, K. A., Flay, B. R., Hu, F. B., Zelli, A., Rashid, J., & Amuwo, S. (1998). Urban pre-adolescents report perceptions of easy access to drugs and weapons. *Journal of Child & Adolescent Substance Abuse, 8*(1), 77-90.

Kruesi, M. J. P., Grossman, J., Pennington, J. M., Woodward, P. J., Duda, D., & Hirsch, J. G. (1999). Suicide and violence prevention: Parent education in the emergency

department. *Journal of the American Academy of Child & Adolescent Psychiatry, 38*(3), 250-255.
Krug, E. G., Dahlberg, L. L., & Powell, K. E. (1996). Childhood homicide, suicide, and firearm deaths: an international comparison. *World Health Stat Q, 49*(3-4), 230-235.
Kuhns, G. F. (1998). Firearm injury prevention. *Ann Intern Med, 129*(4), 335-337.
Lamberg, L. (2002). Younger children, more girls commit acts of violence: Some get help, others receive only punishment. *JAMA: Journal of the American Medical Association, 288*(5), 566-568.
Lamberg, L. (2003). Programs target youth violence prevention. *Jama, 290*(5), 585-586.
Lane, M. A., Cunningham, S. D., & Ellen, J. M. (2004). The intention of adolescents to carry a knife or a gun: A study of low-income African-American adolescents. *Journal of Adolescent Health, 34*(1), 72-78.
Laraque, D. (2004). Injury risk of nonpowder guns. *Pediatrics, 114*(5), 1357-1361.
Laraque, D., Spivak, H., & Bull, M. (2001). Serious firearm injury prevention does make sense. *Pediatrics, 107*(2), 408-410.
Lee, C., & Nolte, K. B. (2001). Two separate unintentional fatalities with the same revolver. *Ann Emerg Med, 37*(3), 333-336.
Liller, K. D., Perrin, K., Nearns, J., Pesce, K., Crane, N. B., & Gonzalez, R. R. (2003). Evaluation of the "Respect Not Risk" firearm safety lesson for 3rd-graders. *J Sch Nurs, 19*(6), 338-343.
Listman, D. A. (2004). Paintball injuries in children: more than meets the eye. *Pediatrics, 113*(1 Pt 1), e15-18.
Livingston, M. M., & Lee, M. W. (1992). Attitudes toward firearms and reasons for firearm ownership among nonurban youth: Salience of sex and race. *Psychological Reports, 71*(2), 576-578.
Loeber, R., Burke, J. D., Mutchka, J., & Lahey, B. B. (2004). Gun carrying and conduct disorder: a highly combustible combination? Implications for juvenile justice and mental and public health. *Arch Pediatr Adolesc Med, 158*(2), 138-145.
Loeber, R., DeLamatre, M., Tita, G., Cohen, J., Stouthamer-Loeber, M., & Farrington, D. P. (1999). Gun injury and mortality: The delinquent backgrounds of juvenile victims. *Violence & Victims, 14*(4), 339-352.
Longjohn, M. M., & Christoffel, K. K. (2004). Are medical societies developing a standard for gun injury prevention? *Inj Prev, 10*(3), 169-173.
Luster, T., & Oh, S. M. (2001). Correlates of male adolescents carrying handguns among their peers. *Journal of Marriage & the Family, 63*(3), 714-726.
Malek, M. K., Chang, B. H., & Davis, T. C. (1998). Self-reported characterization of seventh-grade students' fights. *J Adolesc Health, 23*(2), 103-109.
Marcin, J. P., Schembri, M. S., He, J., & Romano, P. S. (2003). A population-based analysis of socioeconomic status and insurance status and their relationship with pediatric trauma hospitalization and mortality rates. *Am J Public Health, 93*(3), 461-466.
Marsh, P., & Kendrick, D. (1998). Injury prevention training: Is it effective. *Health Education Research, 13*(1), 47-56.
Marwick, C. (1999). HELP network says firearms data gap makes reducing gun injuries more difficult. Handgun Epidemic Lowering Plan. *Jama, 281*(9), 784-785.

Mawson, A. R., Lapsley, P. M., Hoffman, A. M., & Guignard, J. C. (2002). Preventing lethal violence in schools: the case for entry-based weapons screening. *J Health Polit Policy Law, 27*(2), 243-260.

McFarlane, J., Soeken, K., Campbell, J., Parker, B., Reel, S., & Silva, C. (1998). Severity of abuse to pregnant women and associated gun access of the perpetrator. *Public Health Nurs, 15*(3), 201-206.

McGee, J. P., & DeBernardo, C. R. (1999). The classroom avenger: A behavioral profile of school based shootings. *Forensic Examiner, 8*(5-6), 16-18.

McGee, K. S., Coyne-Beasley, T., & Johnson, R. M. (2003). Review of evaluations of educational approaches to promote safe storage of firearms. *Inj Prev, 9*(2), 108-111.

McManus, B. L., Kruesi, M. J., Dontes, A. E., Defazio, C. R., Piotrowski, J. T., & Woodward, P. J. (1997). Child and adolescent suicide attempts: An opportunity for emergency departments to provide injury prevention education. *American Journal of Emergency Medicine, 15*(4), 357-360.

Mercy, J. A., Ikeda, R., & Powell, K. E. (1998). Firearm-related injury surveillance. An overview of progress and the challenges ahead. *Am J Prev Med, 15*(3 Suppl), 6-16.

Metz, M., Kross, M., Abt, P., Bankey, P., & Koniaris, L. G. (2004). Tree stand falls: a persistent cause of sports injury. *South Med J, 97*(8), 715-719.

Meyer, G., Roberto, A. J., & Atkin, C. K. (2003). A radio-based approach to promoting gun safety: process and outcome evaluation implications and insights. *Health Commun, 15*(3), 299-318.

Miller, M., Azrael, D., & Hemenway, D. (2000). Community firearms, community fear. *Epidemiology, 11*(6), 709-714.

Miller, M., Azrael, D., & Hemenway, D. (2002a). Firearm availability and suicide, homicide, and unintentional firearm deaths among women. *J Urban Health, 79*(1), 26-38.

Miller, M., Azrael, D., & Hemenway, D. (2002b). Household firearm ownership and suicide rates in the United States. *Epidemiology, 13*(5), 517-524.

Miller, M., Azrael, D., & Hemenway, D. (2002c). Rates of household firearm ownership and homicide across US regions and states, 1988-1997. *Am J Public Health, 92*(12), 1988-1993.

Miller, M., & Hemenway, D. (1999). The relationship between firearms and suicide: A review of the literature. *Aggression & Violent Behavior, 4*(1), 59-75.

Miller, M., & Hemenway, D. (2004). Unsupervised firearm handling by California adolescents. *Inj Prev, 10*(3), 163-168.

Miller, M., Hemenway, D., & Azrael, D. (2004). Firearms and suicide in the northeast. *J Trauma, 57*(3), 626-632.

Miller, M., Hemenway, D., & Wechsler, H. (2002). Guns and gun threats at college. *J Am Coll Health, 51*(2), 57-65.

Miller, T. W., Clayton, R., Miller, J. M., Bilyeu, J., Hunter, J., & Kraus, R. F. (2000). Violence in the schools: clinical issues and case analysis for high-risk children. *Child Psychiatry Hum Dev, 30*(4), 255-272.

Miltenberger, R. G., Flessner, C., Gatheridge, B., Johnson, B., Satterlund, M., & Egemo, K. (2004). Evaluation of behavioral skills training to prevent gun play in children. *Journal of Applied Behavior Analysis, 37*(4), 513-516.

Mollen, C. J., Fein, J. A., Vu, T. N., Shofer, F. S., & Datner, E. M. (2003). Characterization of nonfatal events and injuries resulting from youth violence in patients presenting to an emergency department. *Pediatr Emerg Care, 19*(6), 379-384.

Molnar, B. E., Miller, M. J., Azrael, D., & Buka, S. L. (2004). Neighborhood predictors of concealed firearm carrying among children and adolescents: results from the project on human development in Chicago neighborhoods. *Arch Pediatr Adolesc Med, 158*(7), 657-664.

Morrison, T. C., Hofstetter, C., & Hovell, M. F. (1995). Firearm ownership and safety practices: A random-digit dial survey of San Diego. *American Journal of Preventive Medicine, 11*(6), 364-370.

Morrongiello, B. A., & Dawber, T. (1998). Toddlers' and mothers' behaviors in an injury-risk situation: Implications for sex differences in childhood injuries. *Journal of Applied Developmental Psychology, 19*(4), 625-639.

Morrongiello, B. A., & Hogg, K. (2004). Mothers' reactions to children misbehaving in ways that can lead to injury: Implications for gender differences in children's risk taking and injuries. *Sex Roles, 50*(1-2), 103-118.

Morrongiello, B. A., & Kiriakou, S. (2004). Mothers' home-safety practices for preventing six types of childhood injuries: What do they do, and why? *Journal of Pediatric Psychology, 29*(4), 285-297.

Morrongiello, B. A., Ondejko, L., & Littlejohn, A. (2004). Understanding Toddlers' In-Home Injuries: II. Examining Parental Strategies, and Their Efficacy, for Managing Child Injury Risk. *Journal of Pediatric Psychology, 29*(6), 433-446.

Murnan, J., Dake, J. A., & Price, J. H. (2004). Association of selected risk factors with variation in child and adolescent firearm mortality by state. *J Sch Health, 74*(8), 335-340.

Nance, M. L., Denysenko, L., Durbin, D. R., Branas, C. C., Stafford, P. W., & Schwab, C. W. (2002). The rural-urban continuum: variability in statewide serious firearm injuries in children and adolescents. *Arch Pediatr Adolesc Med, 156*(8), 781-785.

Nance, M. L., Stafford, P. W., & Schwab, C. W. (1997). Firearm injury among urban youth during the last decade: an escalation in violence. *J Pediatr Surg, 32*(7), 949-952.

Nansel, T. R., Weaver, N., Donlin, M., Jacobsen, H., Kreuter, M. W., & Simons-Morton, B. (2002). Baby, Be Safe: The effect of tailored communications for pediatric injury prevention provided in a primary care setting. *Patient Education & Counseling, 46*(3), 175-190.

Nelson, C. S., Wissow, L. S., & Cheng, T. L. (2003). Effectiveness of anticipatory guidance: recent developments. *Curr Opin Pediatr, 15*(6), 630-635.

Nelson, D. E., Powell, K., Johnson, C. J., Mercy, J., & Grant-Worley, J. A. (1999). Household firearm storage practices: do responses differ by whether or not individuals ever use firearms? *Am J Prev Med, 16*(4), 298-302.

Nguyen, M. H., Annest, J. L., Mercy, J. A., Ryan, G. W., & Fingerhut, L. A. (2002). Trends in BB/pellet gun injuries in children and teenagers in the United States, 1985-99. *Inj Prev, 8*(3), 185-191.

Nondahl, D. M., Cruickshanks, K. J., Wiley, T. L., Klein, R., Klein, B. E., & Tweed, T. S. (2000). Recreational firearm use and hearing loss. *Arch Fam Med, 9*(4), 352-357.

Nordstrom, D. L., Zwerling, C., Stromquist, A. M., Burmeister, L. F., & Merchant, J. A. (2001). Rural population survey of behavioral and demographic risk factors for loaded firearms. *Inj Prev, 7*(2), 112-116.

Oatis, P. J., Fenn Buderer, N. M., Cummings, P., & Fleitz, R. (1999). Pediatric practice based evaluation of the Steps to Prevent Firearm Injury program. *Inj Prev, 5*(1), 48-52.

Odero, W. W., Tierney, W. M., Einterz, R. M., & Mungai, S. (2004). Using an electronic medical record system to describe injury epidemiology and health care utilization at an inner-city hospital in Indiana. *Inj Control Saf Promot, 11*(4), 269-279.

Orpinas, P., Murray, N., & Kelder, S. (1999). Parental influences on students' aggressive behaviors and weapon carrying. *Health Education & Behavior, 26*(6), 774-787.

Orr, D. L., 2nd. (1997). Regulating firearm advertisements. *Jama, 278*(9), 701-702; author reply 703.

Paola, F. A. (2001). Physicians, firearm counseling, and legal liability. *South Med J, 94*(1), 88-92.

Paola, F. A. (2003). Firearm counseling by physicians: coverage under medical liability insurance policies. *South Med J, 96*(7), 647-651.

Paris, C. A., Edgerton, E. A., Sifuentes, M., Seidel, J. S., Lewis, R. J., & Gausche, M. (2002). Risk factors associated with non-fatal adolescent firearm injuries. *Inj Prev, 8*(2), 147-150.

Persky, S. J. (2004). *The effect of violent game play in virtual environments on aggression: Immersive vs. Desktop Platforms.* U California, Santa Barbara, US.

Peterson, L., Bartelstone, J., Kern, T., & Gillies, R. (1995). Parents' socialization of children's injury prevention: Description and some initial parameters. *Child Development, 66*(1), 224-235.

Peterson, L., & Gable, S. (1998). Holistic injury prevention. In J. R. Lutzker (Ed.), *Handbook of child abuse research and treatment Issues in clinical child psychology* (pp. 291-318). New York, NY: Plenum Press.

Powell, E. C., Jovtis, E., & Tanz, R. R. (2001). Incidence and circumstances of nonfatal firearm-related injuries among children and adolescents. *Arch Pediatr Adolesc Med, 155*(12), 1364-1368.

Powell, E. C., & Tanz, R. R. (1999). Child and adolescent injury and death from urban firearm assaults: association with age, race, and poverty. *Inj Prev, 5*(1), 41-47.

Powell, K. E., Jacklin, B. C., Nelson, D. E., & Bland, S. (1998). State estimates of household exposure to firearms, loaded firearms, and handguns, 1991 through 1995. *Am J Public Health, 88*(6), 969-972.

Pratt, L. K., Runyan, C. W., Cohen, L. R., & Margolis, P. A. (1998). Home visitors' beliefs and practices regarding childhood injury prevention. *Public Health Nursing, 15*(1), 44-49.

Price, J. H., Clause, M., & Everett, S. A. (1995). Patients' attitudes about the role of physicians in counseling about firearms. *Patient Education & Counseling, 25*(2), 163-170.

Price, J. H., & Oden, L. (1999). Reducing firearm injuries: the role of local public health departments. *Public Health Rep, 114*(6), 533-539.
Price, J. H., Thompson, A. J., & Dake, J. A. (2004). Factors associated with state variations in homicide, suicide, and unintentional firearm deaths. *J Community Health, 29*(4), 271-283.
Pryor, S. K., Carruth, A. K., & LaCour, G. (2005). Occupational Risky Business: Injury Prevention Behaviors Of Farm Women And Children. *Issues in Comprehensive Pediatric Nursing, 28*(1), 17-31.
Radant, L. J., & Johnson, T. M. (2003). The Wisconsin Research Network Firearm Safety Survey. *Wmj, 102*(4), 46-50.
Ramsey, L. T., & Pelletier, A. R. (2004). Update on firearm use in G- and PG-rated movies. *Jama, 292*(23), 2836-2837.
Rappaport, N. (2002). Zero tolerance and searching for premeditated school shooters. *J Am Acad Child Adolesc Psychiatry, 41*(11), 1271-1272.
Rausch, T. K., Sanddal, N. D., Sanddal, T. L., & Esposito, T. J. (1998). Changing epidemiology of injury-related pediatric mortality in a rural state: implications for injury control. *Pediatr Emerg Care, 14*(6), 388-392.
Reading, R., Langford, I. H., Haynes, R., & Lovett, A. (1999). Accidents to preschool children: Comparing family and neighbourhood risk factors. *Social Science & Medicine, 48*(3), 321-330.
Reilly, P. (2003). In the crossfire. Missouri hospitals ready defenses against law allowing concealed weapons. *Mod Healthc, 33*(40), 14.
Richmond, T. S., Schwab, C. W., Riely, J., Branas, C. C., Cheney, R., & Dunfey, M. (2004). Effective trauma center partnerships to address firearm injury: a new paradigm. *J Trauma, 56*(6), 1197-1205.
Rivara, F. P. (1995). Developmental and behavioral issues in childhood injury prevention. *Journal of Developmental & Behavioral Pediatrics, 16*(5), 362-370.
Roberto, A. J., Meyer, G., Janan Johnson, A., Atkin, C. K., & Smith, P. K. (2002). Promoting gun trigger-lock use: Insights and implications form a radio-based health communication intervention. *Journal of Applied Communication Research, 30*(3), 210-230.
Rodriguez, M. A., & Gorovitz, E. (1999). The politics and prevention of gun violence. *West J Med, 171*(5-6), 296-297.
Roesler, J. (1997). The incidence of child suicide in Minnesota. *Minn Med, 80*(12), 45-47.
Rosengart, M., Cummings, P., Nathens, A., Heagerty, P., Maier, R., & Rivara, F. (2005). An evaluation of state firearm regulations and homicide and suicide death rates. *Inj Prev, 11*(2), 77-83.
Sadowski, L. S., & Munoz, S. R. (1996). Nonfatal and fatal firearm injuries in a rural county. *Jama, 275*(22), 1762-1764.
Sanguino, S. M., Dowd, M. D., McEnaney, S. A., Knapp, J., & Tanz, R. R. (2002). Handgun safety: what do consumers learn from gun dealers? *Arch Pediatr Adolesc Med, 156*(8), 777-780.
Saylor, E. A., Vittes, K. A., & Sorenson, S. B. (2004). Firearm advertising: product depiction in consumer gun magazines. *Eval Rev, 28*(5), 420-433.
Schaechter, J., Duran, I., De Marchena, J., Lemard, G., & Villar, M. E. (2003). Are "accidental" gun deaths as rare as they seem? A comparison of medical examiner

manner of death coding with an intent-based classification approach. *Pediatrics, 111*(4 Pt 1), 741-744.
Scherzer, T., & Pinderhughes, H. L. (2002). Violence and gender: reports from an urban high school. *Violence Vict, 17*(1), 57-72.
Schuster, M. A., Franke, T. M., Bastian, A. M., Sor, S., & Halfon, N. (2000). Firearm storage patterns in US homes with children. *Am J Public Health, 90*(4), 588-594.
Schwebel, D. C., & Bounds, M. L. (2003). The Role of Parents and Temperament on Children's Estimation of Physical Ability: Links to Unintentional Injury Prevention. *Journal of Pediatric Psychology, 28*(7), 505-516.
Seltzer, R. (2002). Unintentional death, suicide, and domestic homicide against the improbable threat of an undefined terrorist or criminal threat. *J Trauma, 52*(4), 814-815.
Senturia, Y. D., Christoffel, K. K., & Donovan, M. (1996). Gun storage patterns in US homes with children. A pediatric practice-based survey. Pediatric Practice Research Group. *Arch Pediatr Adolesc Med, 150*(3), 265-269.
Shah, S., Hoffman, R. E., Wake, L., & Marine, W. M. (2000). Adolescent suicide and household access to firearms in Colorado: results of a case-control study. *J Adolesc Health, 26*(3), 157-163.
Shannon, M. (1999). Lead poisoning in adolescents who are competitive marksmen. *N Engl J Med, 341*(11), 852.
Shapiro, J. P., Dorman, R. L., Welker, C. J., & Clough, J. B. (1998). Youth attitudes toward guns and violence: relations with sex, age, ethnic group, and firearm exposure. *J Clin Child Psychol, 27*(1), 98-108.
Shaughnessy, A. F., Cincotta, J. A., & Adelman, A. (1999). Family practice patients' attitudes toward firearm safety as a preventive medicine issue: a HARNET Study. Harrisburg Area Research Network. *J Am Board Fam Pract, 12*(5), 354-359.
Shenassa, E. D., Catlin, S. N., & Buka, S. L. (2003). Lethality of firearms relative to other suicide methods: a population based study. *J Epidemiol Community Health, 57*(2), 120-124.
Shenassa, E. D., Rogers, M. L., Spalding, K. L., & Roberts, M. B. (2004). Safer storage of firearms at home and risk of suicide: a study of protective factors in a nationally representative sample. *J Epidemiol Community Health, 58*(10), 841-848.
Sidman, E. A., Grossman, D. C., Koepsell, T. D., D'Ambrosio, L., Britt, J., Simpson, E. S., et al. (2005). Evaluation of a community-based handgun safe-storage campaign. *Pediatrics, 115*(6), e654-661.
Simon, H. K., Khan, N. S., & Delgado, C. A. (2002). Concealed weapons and children's hospitals: a new look at safety in our changing world. *Arch Pediatr Adolesc Med, 156*(4), 409.
Slovak, K. (2002). Gun violence and children: Factors related to exposure and trauma. *Health & Social Work, 27*(2), 104-112.
Slovak, K., & Singer, M. (2001). Gun violence exposure and trauma among rural youth. *Violence Vict, 16*(4), 389-400.
Smith, B. L., Bramlett, R. K., & Smith, T. D. (1999). Characteristics of children in homes with guns in a southern state. *Perceptual & Motor Skills, 89*(1), 183-184.

Solomon, B. S., Duggan, A. K., Webster, D., & Serwint, J. R. (2002). Pediatric residents' attitudes and behaviors related to counseling adolescents and their parents about firearm safety. *Arch Pediatr Adolesc Med, 156*(8), 769-775.
Sorenson, S. B., & Vittes, K. A. (2004). Adolescents and firearms: a California statewide survey. *Am J Public Health, 94*(5), 852-858.
Spigner, C. (1998). Race, class, and violence: research and policy implications. *Int J Health Serv, 28*(2), 349-372.
Stanton, B., Baldwin, R. M., & Rachuba, L. (1997). A quarter century of violence in the United States. An epidemiologic assessment. *Psychiatr Clin North Am, 20*(2), 269-282.
Steinman, K. J., & Zimmerman, M. A. (2003). Episodic and persistent gun-carrying among urban African-American adolescents. *J Adolesc Health, 32*(5), 356-364.
Stennies, G., Ikeda, R., Leadbetter, S., Houston, B., & Sacks, J. (1999). Firearm storage practices and children in the home, United States, 1994. *Arch Pediatr Adolesc Med, 153*(6), 586-590.
Stevens, M. M., Gaffney, C. A., Tosteson, T. D., Mott, L. A., Olson, A., Ahrens, M. B., et al. (2001). Children and guns in a well child cohort. *Prev Med, 32*(3), 201-206.
Stewart, M., Pankiw, R., Lehman, M. E., & Simpson, T. H. (2002). Hearing loss and hearing handicap in users of recreational firearms. *J Am Acad Audiol, 13*(3), 160-168.
Strasburger, V. C., & Grossman, D. (2001). How many more Columbines? What can pediatricians do about school and media violence? *Pediatr Ann, 30*(2), 87-94.
Suter, E. A. (1995). Firearm training and storage. *Jama, 273*(22), 1733-1734.
Suter, E. A. (1996). Weapons for protection in home invasion crimes. *Jama, 275*(4), 280-281.
Svenson, J. E., Spurlock, C., & Nypaver, M. (1996). Pediatric firearm-related fatalities. Not just an urban problem. *Arch Pediatr Adolesc Med, 150*(6), 583-587.
Swahn, M. H., Hammig, B. J., & Ikeda, R. M. (2002). Prevalence of youth access to alcohol or a gun in the home. *Inj Prev, 8*(3), 227-230.
Teret, S. P., & Culross, P. L. (2002). Product-oriented approaches to reducing youth gun violence. *Future Child, 12*(2), 118-131.
Thalava, R., & Puttha, R. (2005). Toys and potentially lethal games. *Arch Dis Child, 90*(4), 372.
Tomlinson, R., & Sainsbury, C. (2004). Childhood injury prevention advice: A survey of health professionals responses to common scenarios. *Child: Care, Health & Development, 30*(4), 301-305.
Trent, R. B., Van Court, J. C., & Kim, A. N. (1999). Household gun ownership. *Am J Public Health, 89*(9), 1442.
Trunkey, D. (1995). The role of firearms and violence. *J Trauma, 38*(2), 161.
Twemlow, S. W., Fonagy, P., Sacco, F. C., Otoole, M. E., & Vernberg, E. (2002). Premeditated mass shootings in schools: threat assessment. *J Am Acad Child Adolesc Psychiatry, 41*(4), 475-477.
Vacha, E. F., & McLaughlin, T. F. (2000). Modifying children's responses to unsecured firearms and modifying the keeping and storage of firearms in families of elementary school children: A possible role for child behavior therapy. *Child & Family Behavior Therapy, 22*(2), 21-31.

Vacha, E. F., & McLaughlin, T. F. (2004). Risky firearms behavior in low-income families of elementary school children: The impact of poverty, fear of crime, and crime victimization on keeping and storing firearms. *Journal of Family Violence, 19*(3), 175-184.

Valois, R. F., & McKewon, R. E. (1998). Frequency and correlated of fighting and carrying weapons among public school adolescents. *American Journal of Health Behavior, 22*(1), 8-17.

Vernick, J. S., O'Brien, M., Hepburn, L. M., Johnson, S. B., Webster, D. W., & Hargarten, S. W. (2003). Unintentional and undetermined firearm related deaths: a preventable death analysis for three safety devices. *Inj Prev, 9*(4), 307-311.

Vernick, J. S., Teret, S. P., & Webster, D. W. (1997). Regulating firearm advertisements that promise home protection. A public health intervention. *Jama, 277*(17), 1391-1397.

Wafer, M. S., & Carruth, A. (2003). "Locks for Life": a gun lock distribution community health intervention program. *J Emerg Nurs, 29*(4), 349-351.

Wagner, K. E. (2000). Firearm safety as preventive medicine. *J Am Board Fam Pract, 13*(1), 86.

Wallack, L., Winett, L., & Nettekoven, L. (2003). The Million Mom March: engaging the public on gun policy. *J Public Health Policy, 24*(3-4), 355-379.

Watson, M. W., & Peng, Y. (1992). The relation between toy gun play and children's aggressive behavior. *Early Education & Development, 3*(4), 370-389.

Webster, D. W., Freed, L. H., Frattaroli, S., & Wilson, M. H. (2002). How delinquent youths acquire guns: initial versus most recent gun acquisitions. *J Urban Health, 79*(1), 60-69.

Webster, D. W., Vernick, J. S., Zeoli, A. M., & Manganello, J. A. (2004). Association between youth-focused firearm laws and youth suicides. *Jama, 292*(5), 594-601.

Weichenthal, L. A., & Roberts, A. L. (2004). Impact of police and legislative initiatives on urban gunshot wound admissions. *J Trauma, 56*(6), 1206-1210.

Wheeler, T. (2000). Family physicians and firearm safety counseling. *J Am Board Fam Pract, 13*(2), 160-161.

Wiebe, D. J. (2003a). Firearms in US homes as a risk factor for unintentional gunshot fatality. *Accid Anal Prev, 35*(5), 711-716.

Wiebe, D. J. (2003b). Guns in the home: risky business. *LDI Issue Brief, 8*(8), 1-4.

Wiebe, D. J. (2003c). Homicide and suicide risks associated with firearms in the home: a national case-control study. *Ann Emerg Med, 41*(6), 771-782.

Wiebe, D. J., & Sorenson, S. B. (2002). Studying homicide in the home and how guns are kept. *Inj Prev, 8*(4), 345.

Wiley, C. C., & Casey, R. (1993). Family experiences, attitudes, and household safety practices regarding firearms. *Clinical Pediatrics, 32*(2), 71-76.

Wilkinson, D. L., & Fagan, J. (2001). What we know about gun use among adolescents. *Clin Child Fam Psychol Rev, 4*(2), 109-132.

Williams, S. S., Mulhall, P. F., Reis, J. S., & DeVille, J. O. (2002). Adolescents carrying handguns and taking them to school: psychosocial correlates among public school students in Illinois. *J Adolesc, 25*(5), 551-567.

Winett, L. B. (1998). Constructing violence as a public health problem. *Public Health Rep, 113*(6), 498-507.

Wintemute, G. J. (2002). Where the guns come from: the gun industry and gun commerce. *Future Child, 12*(2), 54-71.

Wintemute, G. J., Parham, C. A., Beaumont, J. J., Wright, M., & Drake, C. (1999). Mortality among recent purchasers of handguns. *N Engl J Med, 341*(21), 1583-1589.

Wintemute, G. J., Romero, M. P., Wright, M. A., & Grassel, K. M. (2004). The life cycle of crime guns: a description based on guns recovered from young people in California. *Ann Emerg Med, 43*(6), 733-742.

Wintemute, G. J., Wright, M. A., Parham, C. A., Drake, C. M., & Beaumont, J. J. (1998). Criminal activity and assault-type handguns: a study of young adults. *Ann Emerg Med, 32*(1), 44-50.

Yexley, M., Borowsky, I., & Ireland, M. (2002). Correlation between different experiences of intrafamilial physical violence and violent adolescent behavior. *Journal of Interpersonal Violence, 17*(7), 707-720.

Zavoski, R. W., Lapidus, G. D., Lerer, T. J., & Banco, L. I. (1995). A population-based study of severe firearm injury among children and youth. *Pediatrics, 96*(2 Pt 1), 278-282.

Zimring, F. E. (2004a). The discrete character of high-lethality youth violence. *Ann N Y Acad Sci, 1036*, 290-299.

Zimring, F. E. (2004b). Firearms, violence, and the potential impact of firearms control. *J Law Med Ethics, 32*(1), 34-37.

List of Appendices

I. *Prelude and apologia appendices:*

A. Description of original study and its flaws.

B. PICGA measure development and factor analysis.

C. Children's responses to defensive and exploratory gun scenarios.

D. Preparing regression analyses to predict children's responses.

II. *Appendices to the main document:*

E. Socio-demographics questionnaire.

F. Parent Inventory of Child Gun Acculturation (PICGA).

G. "What would you do?": Gun Access & Crisis-response Scenarios.

H. Parent Informed Consent and Child Assent Forms.

I. Additional Analysis: Multivariate linear regression analysis of children's crisis responses rank-ordered for competency.

Table 1. Brief Inventory of Gun Risks (BIGR) items

Brief Inventory of Gun Risks (21 items):	PICGA[a] item from which BIGR item was derived:
Demonstrated Gun-injury Risks (13 items)	
1. Any handgun	# of handguns at home
2. Multiple handguns	
3. Any long gun	# of long guns at home
4. Multiple long guns	
5. Any handgun stored unlocked	How often handgun kept quickly accessible
6. Any handgun stored loaded	How often handgun kept loaded
7. Any long gun stored unlocked	How often long gun kept quickly accessible
8. Any long gun stored loaded	How often long gun kept loaded
9. Any hand gun kept for protection	Reasons for keeping handguns
10. Any long gun kept for protection	Reasons for keeping long guns
11. Child sees adults handle guns	How often child sees adults handle guns
12. Child handles guns under adult supervision	How often child handles guns w supervision
13. Child goes hunting/shooting (with close adults)	How often child goes hunting/shooting
Probable Gun-injury Risks (5 items)	
14. Any gun hidden from child	Does child know where handguns are kept
	Does child know where long guns are kept
15. Child handles b.b. guns	# of non-powder guns (e.g., bb guns) at home
16. Child stays at homes with guns	How often child stays at homes w guns
17. Parent does not have gun safety training	Parent does not have gun safety training
18. Parents never/rarely discuss gun safety w child	How often talk to child re gun safety
Possible Gun-injury Risks (3 items)	
19. Child has a strong interest in guns	How much interest child shows in guns
20. Child is not afraid of guns	How afraid of guns is child
21. Child prefers violent games and shows	Does child prefer violent games/TV

[a] PICGA = Parent Inventory of Child Gun Acculturation

Table 2. Brief Inventory of Gun Risks (BIGR) responses for children of gun-owners (N=23).

BIGR Risks (21 items)	Children of Gun-Owners (N=23)																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Demonstrated Risks (13)																							
Any handgun at home	+	+	+	+	+	+	+	+	+	+	0	+	+	0	0	0	+	+	+	0	0	+	0
Multiple handguns at home	+	+	+	+	+	+	+	0	0	+	0	0	0	0	0	0	+	+	+	0	0	0	0
Any long gun at home	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0	0	+	+	0	+	
Multiple long guns at home	+	+	+	+	+	+	+	+	+	+	+	0	+	+	+	+	+	0	0	+	+	0	0
Handgun kept for protection	+	+	+	+	+	+	0	+	0	0	0	+	0	0	0	0	0	+	+	0	0	0	0
Long gun kept for protection	+	+	0	+	+	+	0	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Handgun stored quick access	+	+	+	+	0	+	+	+	+	0	0	+	0	0	0	0	0	0	0	0	0	0	0
Handgun stored loaded	+	+	+	+	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	+	0
Long gun stored quick access	+	+	+	+	0	+	+	0	+	0	+	+	0	+	+	0	0	0	0	0	0	0	0
Long gun stored loaded	+	+	+	+	+	0	+	0	+	0	0	0	0	0	0	+	0	0	0	0	0	0	0
Child sees adults handle guns	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0	0	0	0	0	0	0
Child handles guns	+	+	+	0	+	+	+	+	0	+	+	0	0	0	0	0	0	0	0	0	0	0	0
Child goes hunting/shooting	+	+	+	+	+	+	0	+	+	+	+	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal /13 Demonstrated Risks	13	13	12	12	11	11	9	9	8	7	6	6	4	4	4	4	4	3	3	2	2	2	1
Probable Risks (5)																							
Any gun hidden from child	0	0	0	0	0	0	+	+	0	0	0	+	+	0	0	0	0	+	+	+	+	+	+
Non-powder guns at home	+	+	+	+	+	0	0	+	0	+	+	0	0	0	+	+	+	0	+	+	0	+	0
Child visits homes with guns[a]	+	+	+	+	+	+	+	+	0	+	+	+	+	+	+	+	0	+	0	+	+	0	0
Parents no gun safety training	0	0	+	0	0	0	0	0	+	+	+	+	+	+	0	0	0	0	0	+	+	0	+
Rarely talk gun safety /child[b]	0	0	+	+	0	0	+	0	0	+	0	+	+	+	+	+	+	0	0	+	+	+	+
Possible Risks (3)																							
Child strong interest in guns	+	0	+	0	+	+	0	+	+	0	0	0	0	0	0	0	+	0	0	0	0	0	0
Child no fear of guns[c]	+	+	+	+	+	0	+	+	+	0	0	0	+	+	0	0	+	+	0	0	0	+	0
Child prefers violent shows[d]	+	+	+	0	+	0	0	0	0	0	0	0	+	0	0	0	0	0	0	+	+	0	0
Subtotal Probable/Possible Risks /8	5	4	7	4	5	2	4	5	3	4	3	4	6	4	3	3	4	3	2	6	5	4	3
Total BIG R Risks /21	18	17	19	16	16	13	13	14	11	11	9	10	10	8	7	7	8	6	5	8	7	6	4
Total Comparison Subset[e] /10	8	7	10	6	8	5	5	7	5	7	6	5	6	5	4	4	4	2	1	5	4	3	2

[a] scored (+) if parent answered "yes" or "I don't know" to "Does your child visit or stay over at homes where guns are kept?"

[b] scored (+) if parent reported discussing gun safety with the child never or rarely

[c] scored (+) if parent reported child has little or no fear of guns

[d] scored (+) if parent answered "yes" of "I don't know" to "Does your child prefer violent toys, games, and TV shows?"

[e] Comparison Subset = 10-item subset of BIGR potentially applicable to non-gun-owners' children, including 3 demonstrated risks (child sees adults handle guns, child handles guns, child goes hunting/shooting), 4 probable risks (non-powder guns at home, child visits home with guns, parents do not have gun safety training, and parents rarely or never discuss gun safety with child), and 3 possible risks (child has strong interest in guns, child has little/no fear of guns, and child prefers violent games and tv shows).

Table 3. Comparison subset of Brief Inventory of Gun Risks (BIGR) results for children of non-gun-owners (N=37)

BIGR Comparison Subset (10 items)	Children of Non Gun-Owners with any gun exposure risk (N=19 of 37)f																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Gun Exposure Risks (5)																			
Child sees adults handle guns	+	+	+	0	+	+	+	+	0	0	0	0	0	0	+	0	0	0	0
Child handles guns	+	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Child goes hunting/shooting	+	+	+	0	0	0	0	+	0	0	0	0	0	0	0	0	0	0	0
Non-powder guns at home	0	0	0	+	0	0	0	0	+	0	0	0	0	0	0	0	0	0	0
Child visits homes with guns[a]	+	+	+	+	+	+	+	0	+	+	+	+	+	+	0	+	+	+	+
Subtotal /5 Exposure Risks	4	4	3	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1
Other Risks (5)																			
Parents no gun safety training	0	0	+	+	+	+	0	0	0	+	+	+	+	+	0	+	+	+	+
Rarely talk gun safety /child[b]	+	0	0	0	+	0	0	+	+	+	+	+	+	+	0	+	+	+	+
Child strong interest in guns	0	0	+	+	0	+	+	0	0	+	+	0	0	0	+	0	0	0	0
Child no fear of guns[c]	+	0	+	+	0	0	0	0	0	+	0	+	+	0	+	0	0	0	0
Child prefers violent shows[d]	0	0	+	0	0	0	0	0	0	0	+	+	0	+	+	0	0	0	0
Subtotal /5 Other Risks	2	0	4	3	2	2	1	1	1	4	4	4	3	3	3	2	2	2	2
Total Comparison Subset[e] /10	6	4	7	5	4	4	3	3	3	5	5	5	4	4	4	3	3	3	3

[a] scored (+) if parent answered "yes" or "I don't know" to "Does your child visit or stay over at homes where guns are kept?"

[b] scored (+) if parent reported discussing gun safety with the child never or rarely

[c] scored (+) if parent reported child has little or no fear of guns

[d] scored (+) if parent answered "yes" of "I don't know" to "Does your child prefer violent toys, games, and TV shows?"

[e] Comparison Subset = 10-item subset of BIGR potentially applicable to non-gun-owners' children, including 3 demonstrated risks (child sees adults handle guns, child handlesq guns, child goes hunting/shooting), 4 probable risks (non-powder guns at home, child visits home with guns,

parents do not have gun safety training, and parents rarely or never discuss gun safety with child), and 3 possible risks (child has strong interest in guns, child has little/no fear of guns, and child prefers violent games and tv shows).

F The other 18 children of non-gun-owners in this sample had 0 of 5 exposure risks. One child had 0 risks. Twelve had one of the following risks, and 6 had 2 of the following risks: parents do not have safety training, parents rarely discuss gun safety with child, and child has strong interest in guns. None of the children with 0 exposure risks had more than 2 other risks.

Table 4. Age, gender, and rural residence of children of gun-owners, by lower-risk and higher-risk groups.[a]

	Group		
	Lower risk (n = 11)	Higher risk (n = 12)	Total gun-owners (N = 23)
Mean age (sd)	7.33 (1.15)	7.58 (1.37)	7.46 (1.25)
% male	45.5	75.0	60.9
% rural	72.7	75.0	73.9

[a] Children in the higher-risk group scored 6 or higher on a parent-report measure of 13 demonstrated gun-injury risks, and children in the lower-risk group had fewer than 6 risks on this measure.

Table 5.Comparison subset of Brief Inventory of Gun Risks (BIGR) results for children of non-gun-owners (N=37)

BIGR Comparison Subset (10 items)	Children of Non Gun-Owners with any gun exposure risk (N=19 of 37)f																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Gun Exposure Risks (5)																			
Child sees adults handle guns	+	+	+	0	+	+	+	+	0	0	0	0	0	0	+	0	0	0	0
Child handles guns	+	+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Child goes hunting/shooting	+	+	+	0	0	0	0	+	0	0	0	0	0	0	0	0	0	0	0
Non-powder guns at home	0	0	0	+	0	0	0	0	+	0	0	0	0	0	0	0	0	0	0
Child visits homes with guns[a]	+	+	+	+	+	+	+	0	+	+	+	+	+	+	0	+	+	+	+
Subtotal /5 Exposure Risks	4	4	3	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1
Other Risks (5)																			
Parents no gun safety training	0	0	+	+	+	+	0	0	0	+	+	+	+	+	0	+	+	+	+
Rarely talk gun safety /child[b]	+	0	0	0	+	0	0	+	+	+	+	+	+	+	0	+	+	+	+
Child strong interest in guns	0	0	+	+	0	+	+	0	0	+	+	0	0	0	+	0	0	0	0
Child no fear of guns[c]	+	0	+	+	0	0	0	0	0	+	0	+	+	0	+	0	0	0	0
Child prefers violent shows[d]	0	0	+	0	0	0	0	0	0	0	+	+	0	+	+	0	0	0	0
Subtotal /5 Other Risks	2	0	4	3	2	2	1	1	1	4	4	4	3	3	3	2	2	2	2
Total Comparison Subset[e] /10	6	4	7	5	4	4	3	3	3	5	5	5	4	4	4	3	3	3	3

[a] scored (+) if parent answered "yes" or "I don't know" to "Does your child visit or stay over at homes where guns are kept?"

[b] scored (+) if parent reported discussing gun safety with the child never or rarely

[c] scored (+) if parent reported child has little or no fear of guns

[d] scored (+) if parent answered "yes" of "I don't know" to "Does your child prefer violent toys, games, and TV shows?"

[e] Comparison Subset = 10-item subset of BIGR potentially applicable to non-gun-owners' children, including 3 demonstrated risks (child sees adults handle guns, child handlesq guns, child goes hunting/shooting), 4 probable risks (non-powder guns at home, child visits home with guns,

parents do not have gun safety training, and parents rarely or never discuss gun safety with child), and 3 possible risks (child has strong interest in guns, child has little/no fear of guns, and child prefers violent games and tv shows).

F The other 18 children of non-gun-owners in this sample had 0 of 5 exposure risks. One child had 0 risks. Twelve had one of the following risks, and 6 had 2 of the following risks: parents do not have safety training, parents rarely discuss gun safety with child, and child has strong interest in guns. None of the children with 0 exposure risks had more than 2 other risks.

Table 6. Defensive crisis response groups (N = 57)

Response Group	# of cases	% of sample
Competent	22	36.7
Passive	12	20.0
Bold	11	18.3
Aggressive/Gun	12	20.0
Total	57	95.0
Missing (incomplete data)	3	5.0
	60	100.0

Table 7. Number of children in each Crisis Response Group, by age, gender, and urban/sububan residence.

	Crisis Response Group															
	Competent				Passive				Bold				Aggressive/Gun			
Age Group →	5+6		7+8		5+6		7+8		5+6		7+8		5+6		7+8	
Male/Female →	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Suburban	2	2	6	3	3	3	1	0	1	5	0	0	2	1	1	0
Rural	0	1	5	3	3	0	1	1	1	0	2	2	3	1	4	0

Table 8. Summary demographic data for the four crisis response groups.

Response Group	N	Age mean (Y)	% boys	% rural	% guns
Competent	22	**7.87**	59.1	40.9	40.9
Passive	12	6.20	66.7	41.7	**25.0**
Bold	11	6.43	**36.4**	45.5	**63.6**
Agg/Gun	12	6.75	**83.3**	**66.6**	33.4

Table 9. Responses by children in the Competent Crisis Responders group (n=22).

Participant	Crisis Response #1	Crisis Response #2	Response Categories
1	Call Mom	Call Mom	both optimal
2	Call 911	Call Mom	both optimal
3	Call Mom	Call police	both optimal
4	Call Mom	Call police	both optimal
5	Call 911	Call police	both optimal
6	Call police	Call parents	both optimal
7	Call Dad	Call police	both optimal
8	Call Mom	Call 911	both optimal
9	Call 911	Call parents	both optimal
10	Call Mom	Leave to find help	optimal/otherhelp
11	Call Mom	Run to neighbors	optimal/otherhelp
12	Call Mom	Call neighbors	optimal/otherhelp
13	Call police	Run to police	optimal/otherhelp
14	Go to get help	Call police	otherhelp/optimal
15	Call police	Hide til police arrive	optimal/passive
16	Call Mom + police	Hide with phone	optimal/passive
17	Call 911	Lock doors	optimal/passive
18	Call Mom	Lock doors	optimal/passive
19	Call Mom	Lock doors	optimal/passive
20	Turn on lights	Call police	passive/optimal
21	Hide	Call Mom	passive/optimal
22	Close windows	Call 911	passive/optimal

Table 10. Descriptive statistics for Competent Response Group (vs. Other response groups)

	N	% of sample	Age M	sd	boys	girls	% boys	town	rural	% rural	guns	no-guns	% guns
Competent	22	38.6%	94.3	11.9	13	9	59.1%	13	9	40.9%	9	13	40.9%
Other	35	61.4%	77.5	13.3	22	13	62.9%	17	18	51.4%	14	21	40.0%

Table 11. Responses by Children in the Passive Responders group (n=12)

Participant	Crisis Response #1	Crisis Response #2	Response Categories
1	Hide	Turn invisible (be ghost)	passive/passive
2	Hide	Hide	passive/passive
3	Hide	Hide	passive/passive
4	Shut blinds	Lock doors + watch TV	passive/passive
5	Lock doors + hide	Hide	passive/passive
6	Hide	Stay quiet	passive/passive
7	Lock doors	Hide	passive/passive
8	Lock doors	Hide	passive/passive
9	Cry	Hide	passive/passive
10	Lock door, hide	Hide	passive/passive
11	Hide	Set traps	passive/traps
12	Lock door + stay inside	Set trap (fire)	passive/traps

Table 12. Descriptive statistics for Passive Response Group (n=12)

	N	% of sample	Age M	sd	boys	girls	% boys	town	rural	% rural	guns	no-guns	% guns
Passive	12	21.1	74.4	14.4	8	4	66.7%	7	5	41.7%	3	9	25.0%
Other	45	78.9%	86.5	13.3	27	18	60.0%	23	22	48.9%	20	25	44.4%

Table 13. Responses by Children in the Bold Responders Group (n=11)

Participant	Crisis Response #1	Crisis Response #2	Response Categories
1	Call Mom	Ask man questions	optimal/investigate
2	Ask man who he is	Call Dad	investigate/optimal
3	Go see who it is	Call police if bad man	investigate/optimal
4	Go look w/flashlight	Call Dad	investigate/optimal
5	Lock doors	Go out, look around	passive/investigate
6	Go say hi, know man	Don't know	investigate/passive
7	Ask man who he is	Look out window	investigate/passive
8	Go out, see who it is	Ignore it, not worried	investigate/passive
9	Ask man questions	See if man needs help	investigate/investigate
10	Tell man "Go away"	Hide	confront/passive
11	Tell him "Leave"	Say "Please leave"	confront/confront

Table 14. Descriptive statistics for Bold Responders Group vs. other responders

	N	% of sample	Age M	sd	boys	girls	% boys	town	rural	% rural	guns	no-guns	% guns
Bold	11	19.3%	77.1	12.5	4	7	36.4%	6	5	45.5%	7	4	63.6%
Other	46	80.7%	85.6	15.3	31	15	67.4%	24	22	47.8%	16	30	34.8%

Table 15. Responses by Children in the Aggressive/Gun Responders Group (n=12)

Participant	Crisis Response #1	Crisis Response #2	Response Categories
1	Call Mom	Attack (fists, kicking)	optimal/aggressive
2	Call police	Get gun	optimal/gun
3	Call police	Use gun	optimal/gun
4	Shoot him	Call Mom	gun/optimal
5	Get gun	Call Mom	gun/optimal
6	Get gun + hide with it	Hide without gun	gun/passive
7	Prep for battle--traps, gun	Hide	gun/passive
8	Attack (karate moves)	Give him “poison gum”	aggressive/aggressive
9	Attack (punching)	Attack (throw ice)	aggressive/aggressive
10	Attack (run at w fists)	Attack (big stick)	aggressive/aggressive
11	Get gun	Get karate sticks	gun/aggressive
12	Scare him away w gun	Shoot him in the leg	gun/gun

Table 16. Descriptive statistics for Aggressive/Gun Responders Group vs other responders (n=12)

	N	% of sample	Age M	sd	boys	girls	% boys	town	rural	% rural	guns	no-guns	% guns
Agg/Gun	12	21.1%	81.0	13.2	10	2	83.3%	4	8	66.6%	4	8	33.4
Other	45	78.9%	84.8	15.6	25	20	55.6%	26	19	42.2%	19	26	42.2

Table 17. Logistic regression to predict competent responses from child age.

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	18.708	1	.000
	Block	18.708	1	.000
	Model	18.708	1	.000

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1	Child's Age	.093	.026	13.282	1	.000	1.098
	Constant	-8.467	2.257	14.075	1	.000	.000

Variable(s) entered on step 1: Child's Age.

Table 18. Logistic regression to predict passive responders from child age.

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	6.734	1	.009
	Block	6.734	1	.009
	Model	6.734	1	.009

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1	Child's age	-.063	.027	5.412	1	.020	.938
	Constant	3.764	2.120	3.152	1	.076	43.133

Variable(s) entered on step 1: Child's age (months).

Table 19. Logistic regression to predict bold responses from child age, sex, and guns at home.

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	14.072	3	.003
	Block	14.072	3	.003
	Model	14.072	3	.003

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1	Child's Age	-.084	.036	5.475	1	.019	.919
	Female (0)	-1.775	.864	4.217	1	.040	.170
	Guns/hm (0)	-2.322	.934	6.180	1	.013	.098
	Constant	7.416	3.257	5.186	1	.023	1663.125

Variable(s) entered on step 1: Child's Age, Child's sex (0 = female, 1 = male), Guns/home = 0, no guns at home = 1.

Table 20. Logistic regression to predict bold responses from female sex and no guns at home.
Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1	Female sex (0)	-1.358	.728	3.475	1	.062	.257
	Guns/hm (0)	-1.265	.729	3.009	1	.083	.282
	Constant	-.081	.595	.019	1	.891	.922

Variable(s) entered on step 1: SEX01, Guns/homeDi.

Table 21. Logistic regression to predict aggressive responders from child's sex.

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	3.388	1	.066
	Block	3.388	1	.066
	Model	3.388	1	.066

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1	Male sex(1)	1.386	.831	2.785	1	.095	4.000
	Constant	-2.303	.742	9.640	1	.002	.100

Variable(s) entered on step 1: SEX01.

Appendix A: Description of Originally Proposed Study and Its Flaws

Gun acculturation predictors of children's gun access decisions.

I. Study Goals (as proposed):

a. To introduce new conceptualization of "gun access" construct to include child motivations and exposure to gun acculturative content in addition to gun availability.

b. To create a parent-report measure of acculturative practices related to guns.

c. To predict young children's risky responses to two gun-access scenarios (exploratory and defensive).

d. To identify child and family variables other than previously identified socio-demographic markers (male sex, older age, urban residence, low SES) that account for portions of the variance in child risky responding.

Of these goals, (i) and (ii) were accomplished, in that this project does introduce a parent-report measure of acculturative practices related to guns, which contributes to the conceptualization of "gun access" as a multi-faceted construct that goes beyond the dichotomous indication of the presence or absence of guns at home. Unfortunately, weaknesses in both study design and execution precluded the possibility of meeting the study's other two goals (iii and iv), which entailed predicting children's endorsement of accessing an available gun in response to exploratory and defensive pressures presented in a story.

Two main, and related, impediments prevented these predictive analyses from being feasible. First, the sample for the study was expected to consist primarily of families from a low-SES urban population. However, after an essential recruiting partner pulled out of the study, the obtained sample consisted primarily of well-educated suburban and rural families. Low SES (an index that includes income and parental education) and urban residence are demographic variables previously identified as associated with pro-gun attitudes in older children, making it likely that more gun-access responses would have been available for use as the outcome variable in predictive analyses for a sample with these characteristics.

Urban residence and low SES are also associated with minority racial status, and the proposed sample was expected to include a substantial number of African-American families.

African-American adults and children are disproportionately affected by gun injury, and the shift in sampling is particularly unfortunate in that it resulted in no inclusion of families representative of the population most affected by the study's motivating health problem. The development of any measure of gun acculturation among American children should include consideration of how urban, African-American families handle gun issues. However, the obtained sample did provide information on how a group of rural/suburban, higher-SES, white families handle gun issues with their children. Given that rural residents are also affected by gun injury (albeit to a lesser extent than urban residents) and given that very little information on gun behaviors among families of any demographic description has been published, the current sample provided data with the potential to contribute to the incremental development of knowledge about gun acculturation.

The second major problem in constructing predictive analyses was the development of the parent measure. As a measure of gun acculturation, the PICGA operates very differently for gun-owning and non-gun-owning families. Although the measure was never conceptualized as being limited to gun-owning families, as it is now scored gun-ownership overwhelms the contribution of other variables to the scale total (too many items cannot exceed 0 in non-gun-owning families). Gun acculturation in families that do not keep guns may include exposure to gun activities with family members other than the parents (a few participants with non-gun-owning parents reportedly were exposed to guns on visits to grandparents) and exposure to vicarious gun images in the media (TV, video games), making it unlikely that non-gun-owning parents could acculturate their children into a system of gun beliefs and practices to the same extent as gun-owning parents. However, the over-riding conclusion we can draw from these results is that the complexities of gun acculturation are not adequately captured by the PICGA.

Although not proposed and not presented here, additional analyses that could be run to examine the predictive validity of the PICGA as a measure of gun acculturation in the present sample include examining the congruence between parents' responses to items such as "How interested in guns is this child?," and "How afraid of guns is this child?" and the child's responses to similar items ("How

interesting are guns?" and "How scary are guns?"). Additionally, conducting a factor analysis of the measure that excludes items most directly related to gun ownership could elucidate relationships between items that provide acculturative information that improves upon a simple yes/no parental gun ownership variable. Although descriptively interesting as it is, the PICGA does little to improve upon a one-item question to parents (do you keep guns at home?) because its primary gun-acculturation scales (GE and PA) are so reliant on gun ownership that an almost complete separation of the data set occurs between gun-owners and non-gun-owners. One of the main conceptual points of the study (and impetus for developing the measure) was the idea that gun acculturation is a process too complex to be measured by parental gun ownership alone. We would not expect parental gun ownership alone to predict children's gun-access responses, even in a sample of children providing sufficient gun-access responses for analysis. In summary, the measurement model of the PICGA does not accurately reflect the conceptual model it is intended to represent.

Gun acculturation is an undeveloped area of investigation, and although we continue to think of gun ownership as theoretically distinct from gun acculturation (parents could acculturate children without keeping guns at home, and some parents could intentionally hide their gun behaviors and attitudes from their children, preventing exposure to gun acculturation experiences despite the presence of guns in the home), it appears that in reality parental gun ownership may be a necessary (albeit insufficient) condition for high levels of gun acculturation among young children. Variability in behavior surrounding gun ownership (including parental decisions related to gun storage behaviors, how and when to educate their children about the guns they keep, and similar issues) is perhaps most pertinent to gun acculturation but cannot be measured in non-gun-owning families, who do not have guns in the house to make decisions about. Thus although these items complicate the analysis of the PICGA as a measure for use with non-gun-owning families, it would be difficult to remove these items from the PICGA without reducing its utility in measuring gun acculturation. A better strategy might be to include items that tap anti-gun acculturation in order to provide a variable scale for items that would otherwise score 0 for non-gun-owners (e.g., "does your child know why you do not keep guns at home?") and to provide assessment of the full continuum of gun-related acculturation.

II. Hypotheses (as proposed):

a. The PICGA will yield five factors comprised of items tapping the following dimensions: 1. Parental gun attitudes and behaviors, including the pervasiveness or extremity of relevant parental beliefs and practices (Parental Attitudes, PA); 2. The child's exposure to experiences involving real guns (Gun Exposure, GE); 3. The child's exposure to experiences involving vicarious gun models or toys (Vicarious Exposure, VE); 4. A lack of parent and child contact with and exposure to safety skill training specific and non-specific to guns (Lack of Safety Skills, LS); and 5. The child's likely receptivity to or engagement with pro-gun models and learning experiences available in the environment, including items tapping aggression/manageability, interest in guns, and risk-taking (Child Receptivity, CR).

As described below, factor analysis of the PICGA yielded four meaningful components. Of the five subscales, only the Child Receptivity subscale was entirely unsupported, with the CR items tapping child externalizing behavior problems loading together and the remaining CR items loading with other groups of items, primarily Vicarious Exposure (VE) items. GE subscale items comprised the strongest (first) component, along with several Parental Attitudes items with similar distributions to the GE items (i.e., 0 scores among non-gun-owners). The remaining three components were: 1. a factor comprised primarily of the remaining Parental Attitudes items, 2. a factor comprised of the Vicarious Exposure scale with several Child Receptivity items tapping play behaviors and preferences, and 3. a factor comprised of most Lack of Safety Skills items.

b. Children will be less likely to endorse exploratory gun-access than defensive gun-access, but we will obtain some variability in responses to the current exploratory-access scenario (i.e., some children will still endorse exploratory access).

Contrary to this prediction, there was no difference between the number of children giving exploratory gun-access responses and the number of children giving defensive gun responses (although these were not all

the same children). As described further below, 8 children made any defensive gun-access response, and 9 children made any exploratory gun-access response (4 children endorsed both defensive and exploratory access, 5 children endorsed only exploratory access, and 4 children endorsed only defensive access). Thus, even when gun access is considered across exploratory and defensive conditions, only 13 children made any gun-access response.

c. We hypothesize that socio-demographic factors previously related to child gun behaviors by other researchers (i.e., race, age, and sex) will predict (account for some of the variance in) children's risky responses. Older age, minority race, and male sex will be related to risky responding and will account for some of the variability in children's generated responses. Although lower socioeconomic status and urban residence also would be expected to be related to higher levels of gun involvement, these socio-demographic indices are unlikely to contribute to the proposed model because of likely restrictions in variability on these characteristics in the sample.

Socio-demographic factors previously related to child gun behaviors include minority race, older age, male sex, lower socio-economic status, and urban residence. Of these variables, the original sample was expected to be sufficiently variable in terms of race, age, and sex to allow these variables to exert an influence in the regression analysis, while urban residence and lower socio-economic status were expected not to vary sufficiently due to over-representation in the sample. In the obtained sample, age and sex varied sufficiently to be included as predictor variables in regression analyses, but race did not (the sample was very predominantly white). As expected, urban residence and lower socio-economic status also could not be included in the analyses; however, this was due to under-representation in the sample. The sample did vary, however, in terms of rural vs. suburban (town) residence; this variable, although not discussed in the proposal, could be conceptually meaningful in that rural residence is associated with gun use (like urban residence, but with rural residents more likely to keep long guns and urban residents more likely to keep hand guns). Although long guns are less commonly kept for protection than are handguns, and therefore are expected to be less likely to be associated with acculturation toward gun-access during a defensive crisis,

children whose gun acculturation involves systems of gun-related beliefs and behavior other than those driven by defensive motivations are also of interest.

d. We further hypothesize that child behavior problems/aggression, as measured by a brief, standardized instrument of externalizing behaviors (Eyberg, 1999), will add to the predictive value of this model when included in the regression analysis. Higher scores on a standardized parent-report measure of child externalizing behaviors (the Eyberg Child Behavior Inventory, ECBI) will contribute to the prediction of children's risky gun-access responses.

In the proposal, the variable specified as hypothesized to be predictive is an ECBI problem T-score over 70. In this sample, 0 participants had T-scores over 70. Therefore, insufficient variability in the obtained sample on this variable (parent-reported aggression) precluded its inclusion in regression analyses. Further, the mean ECBI T-scores did not differ between children making any exploratory or defensive gun-access response (M=51.68, sd 7.07) and children making no gun response (52.23, sd 7.87).

e. Ambiguous cues presented in the defensive-responding scenario, while clearly evocative of a perceived threat, will be more likely to provoke defensively-motivated confrontation on the part of aggressive children than on the part of non-aggressive children. Aggressive children will be more likely to perceive the threat of aggression as imminent, as well as more likely to generate a confrontative response as the most effective defense.

None of the children in the sample met criteria to be described as aggressive (T-scores over 70 on the ECBI). ECBI T-scores for children who generated competent crisis responses (N=22, Mean 50.23, sd 6.95) were no different than ECBI T-scores for children who generated less-competent crisis responses (N=35, Mean 52.89, sd 6.95).

f. Higher scores on a parent-report measure of the child's exposure to pro-gun models and other opportunities for gun-related learning will contribute to a predictive model of children’s risky gun-access responding. Higher scores on each of the five PICGA subscales will be related to child responses endorsing risky gun behavior in exploratory and defensive contexts. Given that exposure to more pro-gun experiences (involving real

> guns, vicarious gun images or models, and parental models of pro-gun attitudes) is hypothesized to predict child endorsement of both exploratory and defensive gun access, we hypothesize that scores on the Parent Inventory of Child Gun Acculturation will add substantially to the predictive model, accounting for additional variance in the children's reports of gun access in response to exploratory and defensive pressures. In particular, higher scores on the Gun Exposure (GE); Vicarious Exposure (VE); Parental Attitudes (PA); Lack of Safety Skills (LS); and Child Receptivity (CR) subscales of the PICGA are expected to help predict which children generate risky gun-related responses to our gun-access scenarios.

Although limitations in the PICGA undoubtedly weaken it as a measure of gun acculturation, especially for use in predicting children's responses in a sample of gun-owning and non-gun-owning families, sufficient variability in PICGA scores was obtained to allow their use as a variable in regression analyses. However, as discussed below, score distributions for the GE and PA subscales could not be normalized due to bimodal distributions; when dichotomized, score splits on these variables produce categories equivalent to gun-ownership vs. non-gun-ownership. The distributions of the Vicarious Exposure and Lack of Safety Skills subscales, as well as the distribution of PICGA total scores, approximated the normal sufficiently to allow these variables to meet assumptive criteria for appropriate inclusion in regression analyses. The Child Receptivity subscale was not supported by factor analysis, and was skewed toward low scores more than the VE and LS subscales. As discussed, insufficient defensive gun-access responses (N=8) precluded performing analyses to predict these responses.

Appendix B: Parent Inventory of Gun Acculturation—Development and Factor Analysis

I. PICGA Development (as proposed)

The Parent Inventory of Child Gun Acculturation (PICGA) will be factor-analyzed to yield subscale scores. Confirmatory factor analysis (CFA) will be conducted to determine if PICGA factors are as predicted, and to what extent they constitute meaningful subscales of the measure.

Factor Analysis of scored Parent Inventory of Child Gun Acculturation. SPSS Factor Analysis Procedure set to extract 5 factors (based on number of subscales in proposed confirmatory FA model). Presented is the Rotated Component Matrix - Extraction Method: Principal Component Analysis (5 factors extracted). Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 9 iterations.

Total Variance Explained (rotated solution)

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	17.795	32.354	32.354	17.795	32.354	32.354	14.518	26.397	26.397
2	3.806	6.920	39.274	3.806	6.920	39.274	4.967	9.031	35.428
3	3.534	6.426	45.700	3.534	6.426	45.700	4.037	7.339	42.767
4	2.696	4.902	50.601	2.696	4.902	50.601	3.772	6.858	49.624
5	2.519	4.580	55.181	2.519	4.580	55.181	3.056	5.557	55.181

Extraction Method: Principal Component Analysis.

The factor loading matrix presented below is discussed in terms of the PICGA original subscales as well as in terms of the structure suggested by the factor analysis. Overall, the factor analysis results suggest a dominant first factor reflecting gun ownership and behaviors closely related to gun ownership; a second factor reflecting child gun-related games, toys, and television, and the child's interest in guns and gun-related media; a third factor comprised of safety-related behaviors; a fourth factor comprised of items tapping parental gun-related attitudes (closely related to factor 1); and a small fifth factor comprised of items tapping child behavior problems. Factors 2 and 3 were not closely related to Factors 1 and 4, i.e., "vicarious exposure" (factor 2) was related to neither gun exposure (factor 1) nor parental pro-gun attitudes (factor 4); similarly, a lack of safety skills (factor 3) was unrelated to gun acculturation experiences/attitudes (factors 1 and 4). Factor 5 items did not load with any other factors, reflecting a lack of association in this sample between child behavior problems and other areas of conceptual interest (gun exposure, vicarious exposure, parental attitudes, and safety behavior).

CLS PICGA Items Component

	#	Label		1	2	3	4	5
A	1	# of handguns at home	GE	**.799**	7.803E-02	-.229	.120	.139
A	2	Reasons for keeping handguns	PA	**.741**	.165	-.168	*.437*	.108
A	3	How often handgun kept quickly accessible	GE	**.731**	*.221*	4.413E-02	*.283*	.106
A	4	How often handgun kept loaded	GE	**.671**	.104	-3.575E-02	*.235*	.192
A	5	Child knows handguns are kept at home	GE	**.824**	9.338E-02	-.179	.102	.116
A	6	Child knows where handguns are kept	GE	**.842**	.198	-.129	-4.369E-02	6.417E-02
A	7	Child knows why handguns are kept	PA	**.848**	.122	-.217	9.640E-02	.139
A	8	# of long guns at home	GE	**.843**	6.245E-02	2.314E-02	9.660E-02	-.340
A	9	Reasons for keeping long guns	PA	**.807**	.184	-8.583E-02	*.322*	-.204
A	10	How often long gun kept quickly accessible	GE	**.726**	*.244*	*.200*	-7.628E-02	-6.295E-02
A	11	How often long gun kept loaded	GE	**.663**	5.770E-02	-5.731E-03	6.216E-02	.178
A	12	Child knows long guns are kept at home	GE	**.808**	-2.017E-02	9.647E-03	.165	-.354
A	13	Child knows where long guns are kept	GE	**.884**	6.356E-02	-8.767E-03	1.049E-03	-.299
A	14	Child knows why long guns are kept	PA	**.862**	6.877E-02	6.606E-02	.140	-.294
A	15	# of non-powder guns (e.g., bb guns) at home	GE	**.623**	-.104	-.113	*.357*	-.151
A	34	Endorsed gun acculturation statements	PA	**.654**	-5.191E-03	-.284	.153	2.239E-03
A	36	How afraid of guns is child (less afraid/higher)	CR	**.523**	.115	-7.034E-02	-.185	6.397E-02
A	47	Child has older siblings	CR	**.229**	-.137	-.346	-7.394E-02	-.297
A	17	How often child sees adults handle guns	GE	**.801**	*.352*	-1.472E-02	9.193E-02	-.178
A	18	How often child handles guns w supervision	GE	**.669**	*.346*	-6.563E-02	4.420E-02	-.180
A	20	How often child goes hunting/shooting	GE	**.706**	*.496*	-7.072E-03	7.440E-02	-4.444E-02
B	19	How often child goes to guns shops/shows	GE	**.480**	*.351*	-.168	***.421***	-6.572E-02
B	30	Best age to teach child to shoot (young/high)	PA	**.435**	*.273*	-.136	***.415***	-6.283E-02
B	27	How fun are guns	PA	**.531**	*.230*	-.119	***.368***	.299
B	26	How dangerous are guns (less danger/high)	PA	**.468**	*.367*	-6.245E-02	***.332***	9.923E-02
B	29	When parent learned to shoot (younger /high)	PA	**.367**	*.332*	-.144	***.308***	.149
B	22	Parent belongs to gun club/organization	PA	**.384**	2.471E-02	-3.443E-02	***.349***	4.050E-02
B	24	How useful loaded, quickly accessible handgun	PA	***.463***	*.230*	-3.020E-02	**.631**	.180
B	25	Difference score useful-loaded/accessible vs not	PA	***.581***	8.224E-02	-7.975E-03	**.602**	5.967E-02
B	31	Best age to give child first gun (young/high)	PA	***.440***	*.287*	-8.335E-02	**.571**	-.286
B	21	How often child stays at friends' homes w guns	PA	***.375***	.137	-6.977E-02	**.486**	-8.697E-02
B	28	Parent has not talked to Dr. re gun safety	LS	-8.044E-03	6.736E-02	-.266	**.354**	-6.262E-02
C	54	How often child plays pretend gun/shooting	CR	*.220*	**.752**	-8.281E-02	2.088E-02	-4.381E-02
C	35	How much interest child shows in guns	CR	*.454*	**.687**	5.272E-02	-8.409E-02	-5.930E-03
C	16	# of toy guns (e.g., water shooters) at home	VE	*.308*	**.569**	-2.583E-02	9.741E-02	-5.004E-02
C	51	# days/week child plays video games	VE	*.264*	**.412**	-.445	-.183	7.627E-02
C	50	How often child watches TV w guns/shooting	VE	.166	**.657**	-6.753E-02	3.398E-02	8.882E-02
C	52	# of hours child plays video games / school days	VE	.151	**.264**	-.321	-.396	.110
C	49	# of hours child watches TV / school days	VE	9.163E-02	**.604**	-2.433E-02	*.257*	.106
C	55	Child prefers violent games/TV	CR	-1.293E-02	**.587**	.154	-4.814E-02	8.278E-02
C	53	How often child plays vids w/guns/shooting	VE	-2.707E-03	**.570**	-8.913E-02	*.212*	-.132
C	48	# days/week child watches TV	VE	2.177E-02	**.385**	-.313	*.303*	1.746E-02
C	39	Parent has talked to child re response to intruders	PA	8.356E-02	**.305**	-.440	-.283	-.124
D	38	Fewer endorsed emergency rspns stmnts to child	LS	-.162	-.105	**.775**	.110	5.012E-02
D	33	Fewer endorsed gun safety stmnts to child	LS	.174	.147	**.711**	-3.268E-02	5.411E-02
D	40	Child does not know 911	LS	-3.947E-02	-.111	**.676**	-.221	6.796E-03
D	32	Talk to child re gun safety less often	LS	-.488	-.143	**.550**	-8.119E-04	-4.980E-02
D	23	Parent does not have gun safety training	LS	-.160	-4.145E-03	**.549**	-.119	-.203
D	37	Talk to child re emergency rspns less often	LS	*.244*	.210	**.518**	-.196	*.239*
D	41	Child does not know address and phone #	LS	-.144	-4.307E-02	**.448**	-.174	-3.272E-02
D/E	42	Practice 911 w child less often	LS	.105	-4.607E-02	***.359***	8.500E-02	**.464**
E	43	How often is child difficult to manage/uncoop	CR	-7.001E-02	7.328E-02	1.119E-02	-.200	**.749**
E	44	How often is child angry/aggressive or tantrums	CR	-.110	-2.894E-02	-2.991E-02	-.230	**.743**
E	45	How often is child impulsive, acts w/o thinking	CR	5.100E-03	-5.520E-02	1.147E-03	.180	**.618**
E	46	How often is child wild, daredevil, risk-taker	CR	-2.397E-02	*.276*	-7.866E-02	6.291E-02	**.324**

Cluster A (indicated by A in the first column of the table, labeled CLS) is comprised of 21 items (item #s 1-15, 17, 18, 20, 34, 36, 47), including 14 of 15 Gun Exposure subscale items, as well as 5 Parental Attitudes subscale items and 2 Child Receptivity Subscale items. Of 21 Cluster A items, 18 loaded clearly on Factor 1 and no other factor, and 3 loaded secondarily on Factor 2. Of the 18 items that loaded only on Factor 1, 15 were related directly to gun ownership, including the # of handguns and # of long guns at home, reasons for keeping handguns and reasons for keeping long guns, child knows that handguns/long guns are kept at home, child knows where/why handguns/long guns are kept, how often handgun/long gun kept quickly accessible/loaded, and the # of non-powder guns (e.g., bb guns) at home. Of these items, all but the "child knows why handguns/long guns kept at home" and "reasons for keeping handguns/long guns" items were originally on the GE subscale (the "why" and "reasons" items were PA subscale items). The remaining 3 items that loaded with these gun-exposure items were the number of gun acculturation statements parents endorsed having made to their children (PA), and the child being rated less afraid of guns (CR), as well as one un-interpretable item: child has older siblings (CR). Scores on these items were closely related to scores on gun-exposure-related items and to no other subset of scores on the PICGA. The three items that loaded predominantly on Factor 1 and shared secondary loadings on Factor 2 included how often the child sees adults handle guns, how often the child handles guns under close adult supervision, and how often the child goes hunting or shooting (all originally GE items).

Overall, this component (Cluster A/Factor 1) appears to support the overall construct of the Gun Exposure subscale, as it includes 14/15 Gun Exposure subscale items, intended to represent the child's exposure to actual gun experiences and parental gun behavior models. (The 15th GE item, how often the child goes to gun shops/shows, loaded with parental attitudes subscale items; to be discussed below.) In addition to 14 GE items, Cluster A includes 7 items from other subscales (5 items from the Parental Attitudes subscale and 2 items from the Child Receptivity subscale) that were too closely tied to gun behavior in this sample to load separately from gun ownership items. Of the 2 Child Receptivity subscale items, one represents a quirk in the sample (apparently gun owning families were more likely to endorse the item "child has older siblings" even though the participating children of gun owners were no different in age from the

participating children of non-gun-owners), whereas the other may be more meaningful. Children whose parents keep guns at home were apparently less afraid of guns than were children of non-gun-owners, which is consistent with the idea that pro-gun acculturation includes messages and experiences that make guns less frightening (e.g., seeing parents handle guns without fear). However, it is also possible that gun-owning parents were motivated to believe that their children are not afraid of guns, and that this influenced their ratings.

The 5 attitudinal items include the number of different reasons parents keep handguns / long guns, and whether a child knows why his/her parents keep handguns / long guns (4 items that could not score above 0 if the parents did not keep guns, as was the case for most GE items but not for most items on other subscales), as well as the number of gun acculturation statements parents made to their children. That the "gun acculturation statements" item loaded this way reflects the tendency (in this sample) for gun-owning parents to talk about guns with their children in distinctively different ways than did non-gun-owning parents. Although the item was originally conceptualized as a Parental Attitudes item, its association with gun behavior (reflected in its loading with the GE items) is consistent with the conceptualized response pattern. Two sets of "gun safety" statements were presented to parents for endorsement. One set was designed to represent gun safety statements consistent with AAP guidelines (insert list), and one set was designed to represent more pro-gun or acculturative gun statements related to parameters of appropriate or parentally endorsed gun use (insert list). The safe-statements item (reverse-scored on the Lack of Safety Skills subscale) loaded with other safety-related items, with no loading on Factor 1 (the gun-exposure-related component), whereas the item endorsing pseudo-safe/acculturative statements loaded on Factor 1 with gun-exposure/ownership items.

Cluster B is comprised of 9 items, including 5 items that have evenly split loadings on Factors 1 and 4, and 6 items that loaded predominantly on Factor 4 (all but one also loaded secondarily on Factor 1). Cluster B demonstrates the relationship between the GE subscale and the PA subscale, in that half the Cluster B items could be interpreted as Cluster A items (their loadings are split almost evenly between Factors 1 and 4) and the other half, although predominantly loading on Factor 2, still share some variance with Factor 1 items.

Clusters A and B include all but one item from the GE and PA subscales. Although the GE and PA subscales were not as conceptually distinct as we predicted, and did not divide precisely according to predicted subscale divisions, it is not surprising that they share a more complicated factor structure. Although the relationship between attitudes and behavior is not perfect, it is expected that parents with more strongly pro-gun attitudes (higher PA scores) would be more likely to own guns and expose their children to gun experiences (higher GE scores). This is largely supported by the observed relationships between Components 1 and 4 in the rotated solution. Additionally, some support exists for separate subscales, in that a subgroup of the PA items were clearly less related to Factor 1 /GE items (and more closely related to each other) than were other PA items. The PA items that loaded only on Factor 1 (discussed above) may be more accurately thought of as behavioral than attitudinal, in that scores above 0 require that parents keep guns at home (children cannot know why their parents keep guns at home if their parents do not keep guns at home). As scored, these PICGA items cannot represent attitudinal variability among gun owners well, and it is questionable how these items could be scored to provide meaningful variability in exposure scores beyond more rudimentary items tapping basic gun behavior/ownership. This is in part due to the nature of these "why" questions – for example, in the item "reasons for keeping guns" it is unclear which reasons should be considered more attitudinally acculturative (PA). In the current design, variability in this item just ends up being associated with the number of guns parents keep at home (more types of guns = higher GE items scores, and more types of guns = more reasons for keeping guns). Therefore, this item, and several others like it, although intended to assess attitudinal variability among gun owners, instead represented behavior associated with owning guns. In contrast, Cluster B items had lower (or, in one case, non-significant) Component 1 loadings, and significant (and sometimes predominant) Component 4 loadings. These 11 items consist of 9 items from the Parental Attitudes subscale, 1 item from the Gun Exposure subscale, and 1 item from the Lack of Safety Skills subscale. Most of these items are clearly attitudinal items that all parents, regardless of gun-ownership, could endorse, thereby increasing score variability, and reducing the association with gun ownership behaviors represented on Component 1. Although a relationship between high scores on these items and high GE scores would be predicted (and is suggested by the shared loadings of many of these items on Factor 1), most of these items constitute a subset of gun-related items that were predicted to be more attitudinal than behavioral.

Cluster B PA items included one historical item (the age at which the parent first learned to shoot, with younger age = higher score), and 6 questions about parental opinions, including the best age to teach a child to shoot (younger age = higher score) and the best age to give a child his/her first gun (younger age = higher score), as well as how fun are guns (more fun = higher score), how dangerous are guns (less dangerous = higher score), how useful is a handgun for home or self-protection if it is kept loaded and quickly accessible (more useful = higher score), and a difference score between this last item and the item how useful is a handgun for home or self-protection if it is kept unloaded and not quickly accessible (greater difference = higher score). This last item is based on previous reports of an association between this type of difference score and unsafe storage practices among handgun owners. Parents who believe a loaded, quickly accessible handgun is much more protective than one kept unloaded and locked away may be more likely to keep handguns quickly accessible, if they keep a handgun for protection. In this case, the item was scored based on the idea that parents who value loaded, quickly accessible handguns for protection have gun-protection-related attitudes that are likely to acculturate their children into a belief system than includes gun-coping. 7/11 Cluster B items are thus conceptually distinct from Cluster A items, although still related to them, as expected.

The remaining 4 Cluster B items, although they cluster with the clearly attitudinal items above, are in fact items about gun-related behaviors. Each of these 4 items appeared to load with Cluster B for individual reasons. One item (how often child goes to guns shops/shows), was a GE subscale item -- it taps behaviors that expose the child to guns. Although it loaded on Component 1 with similar gun exposure items, it loaded almost equally strongly on Component 4, with attitudinal items. In this sample, going to gun shops was apparently related to more extreme gun-related beliefs than were similar gun-exposure items (e.g., how often the child goes hunting, which loaded on Component 1). Two items were PA subscale items (like the 7 Cluster B PA items discussed already): whether the parent belongs to any gun club or gun-related organization, and how often the child stays at friends' homes with guns. Very few parents belonged to gun clubs or organizations, reducing the interpretability of this item (although the association with more extreme pro-gun attitudes is conceptually reasonable). Most parents responded, "I don't know" to the item

"how often does your child spend time at or stay over at relatives' or friends' homes where there are guns?", reducing the number of parents contributing attitudinally meaningful responses (i.e., never/rarely/sometimes/often/very often) to be scored. However, the factor analysis results suggest that the few parents who indicated "often/very often" on this item also scored high on pro-gun attitudinal questions distinct from basic gun-behavior questions. The last Cluster B item is the only Cluster B item that did not load significantly on Component 1, an LS subscale item on which higher scores indicate that the parent has not talked to a Dr. about gun safety. Few parents endorsed having consulted with a health professional about guns. However, these results suggest that parents who endorsed more extreme pro-gun beliefs were even less likely than most to discuss gun safety with a medical expert. Although the sample size was too small to permit analyses of subgroups of gun-owning parents, parents who contributed to Cluster B loadings may represent a group of (mostly) gun-owning parents with particular and extreme views about guns. Taking children to gun shows/shops may be considered more extreme/unusual than taking a child hunting (hunting is often a traditional family activity, especially among rural families). Similarly, many gun-owning parents, and many non-gun-owning parents, rated guns as "extremely" dangerous (a 10 on a 1-10 scale); those who didn't, and especially those who rated guns as "somewhat" or less dangerous, contribute to Cluster B's Factor 4 split loadings that distinguish them from Cluster A.

Although conceptually somewhat different from the original PA subscale, this smaller PA-dominated cluster of items seems to represent a subscale tapping more extreme pro-gun attitudes and behaviors, all but one of which are also related to Factor 1 GE behaviors, including believing children should be taught to shoot when they are young, believing guns are very fun and not very dangerous, believing a loaded and quickly accessible handgun is protective, and having a child who goes to gun shops/shows more often. However, one PA item predicted to load with these more extreme parental attitudes (parent has talked to child about what to do if someone tries to break into the house) did not. Instead, it loaded with Cluster C (vicarious exposure), to be discussed below.

Cluster C is comprised of 11 items with predominant loadings on Component 2 and very small or non-significant loadings on other factors, including all 7 items from the Vicarious Exposure Subscale, as well as

3 items from the Child Receptivity subscale and 1 item from the Parental Attitudes subscale. The 7 Vicarious Exposure subscale items included the number of toy guns (e.g., water shooters) at home, 3 items about television exposure (the number of days/week the child watches TV, the number of hours the child watches TV on school days, and how often the child watches TV shows that have guns/shooting), and 3 items about video games exposure (the number of days/week the child plays video games, the number of hours the child plays video games on school days, and how often the child plays video games that have guns/shooting). The 3 Child Receptivity subscale items that loaded with these Vicarious Exposure items, although originally conceptualized as child-driven preferences or behaviors distinct from more parent-driven vicarious exposure, may be seen as conceptually similar to other items already included as a measure of Vicarious Exposure, including how often the child plays pretend or imaginary games involving guns or shooting, how much interest the child shows in guns, and whether the child prefers violent games and TV shows. As suggested by the factor analysis results, these items are more appropriately considered part of the Vicarious Exposure subscale. The final Cluster C item, interestingly, was whether the parent had talked to the child about how to respond if an intruder attempted to break into their home. This item was included with a number of other emergency-scenario response items, and was predicted to show a distinct response pattern from the other similar items (which consisted of more realistic threats to children parents should teach them about, like escaping from a home fire). For this item (#39), higher scores indicated that the parent has talked to the child about what to do if an intruder tries to break into their home. As predicted, this item loaded distinctly from the other emergency-response talks, which loaded with other safety behaviors. However, it did not load with other pro-gun parental attitudes, as predicted. That it loaded with a cluster clearly dominated by items indicative of the child's level of exposure to media and other vicarious gun models suggests that perhaps discussing this remote risk with children could be related to the child's exposure to intruder scenarios in the media. Although interpretation of this factor loading is conjectural, it may be children who watch more violent TV are exposed to intruder scenarios that create the need for parental reassurance (prompting talk about what to do in such an emergency). Overall, the observed relationships for Cluster C items suggest a lack of association between Vicarious Exposure and Gun Exposure. In this sample, parenting behaviors related to gun exposure were clearly distinct from parenting behaviors related to media exposure and violent play. These results support the construct of multiple

possible gun-acculturation pathways (involving various combinations of parent and child behaviors related to guns and gun media images), but they do not clarify the roles of real and vicarious gun experiences in the development of acculturated gun beliefs and behaviors.

Cluster D is comprised of 7 items that loaded on Factor 3 and no other factors, all of which were from the Lack of Safety Skills subscale (LS). Items on this subscale were reverse scored so that higher scores indicate riskier or less safety-conscious responses. The safety behaviors assessed included two items expected to vary with child age, i.e., child does not know 911 and child does not know address and phone number, as well as how often the parent talks to the child about emergency responding (less often = higher score), and an item listing emergency scenarios the parent can endorse as having been talked about with the child (fewer endorsed scenarios = higher scores). Three LS items concerned gun-related safety specifically, including whether the parent has had gun safety training (no = higher score), how often the parent talks to the child about gun safety (less often = higher score), and an item listing gun safety statements the parent can endorse as having made to the child (fewer endorsed statements = higher score). These items, like the other Cluster D items, were not related to the Gun Exposure subscale items (Factor 1) as predicted. Although surprising, it appears that there was little association between having had gun safety training and keeping guns. All but 2 LS items loaded together on Factor 3. Of the remaining 2 LS items, one loaded with Parental Attitudes items in Cluster B and was related to Gun Exposure items (parent has not talked to a health care provider about gun safety), and the other (parent has not practiced 911 or fire escape plan with child) loaded on Factor 3 (like other Cluster D items), but loaded predominantly on Factor 5 (to be discussed below). Overall, these results suggest that parents answered LS items similarly, supporting the construct of a safety skills subscale on the PICGA, but also suggest that in this sample safety skills were unrelated to other tapped constructs, including gun exposure. An examination of item inter-correlations may clarify these results (e.g., were LS items tapping a lack of gun-related and safety skills related to GE items tapping unsafe gun storage practices?).

Cluster E is comprised of 5 items that loaded predominantly on Factor 5, 4 of which were from the Child Receptivity subscale and did not load on any other factor, and one of which was from the Lack of Safety

Skills subscale and loaded secondarily on Factor 3 (like Cluster D/Lack of Safety Skills items). The four CR items, which all concern child externalizing behavior problems, included how often the child is difficult to manage/uncooperative, how often the child is angry/aggressive or throws tantrums, how often the child is impulsive or acts without thinking, and how often the child acts wild, takes risks, is a daredevil. These items, interestingly, were unrelated to any of the other PICGA items, with the exception of the LS item how often the parent practices 911 or home fire drills with the child (less often = higher scores). Although is not clear why parents who endorsed child behavior problems would be less likely to practice safety skills with their child, this item may be more accurately conceptualized as belonging to Cluster D, with the other LS items. Given the observed lack of association between these items and the other PICGA clusters, and given that better-developed measures of child behavior problems already exist, these results support the removal of the Child Receptivity subscale of the PICGA. The original intent of the Child Receptivity subscale was to acknowledge the contribution of the child's tendencies and preferences to influence the level of gun acculturation. However, the transactional relationship between child and parental behaviors does not allow for easy separation of the child's contribution onto one distinctive subscale, especially given the involvement of the child in many of the behaviors asked about throughout the measure. For example, how often the child sees adults handle guns, whether the child knows where guns are located in the home, and many other Gun Exposure subscale items involve child – as well as parental -- behavior. It is therefore not surprising that the 9 items of the Child Receptivity subscale did not load similarly to one another. These items loaded onto three distinct components (2 items in Cluster A, one of them un-interpretable), 3 items in Cluster C, and 4 items in Cluster E). The most meaningful cluster of Child Receptivity items loaded on Factor 2 with conceptually similar Cluster C vicarious gun exposure items (how often the child plays pretend gun/shooting games, how much interest the child shows in guns, and whether the child prefers violent games/TV shows). These items contribute to an improved Vicarious Exposure subscale and could be retained in a revised version of the measure. The remaining CR items should be removed, to create a more cohesive measure of child gun acculturation without extraneous or uninterpretable items. The remaining item in Cluster E (911 practice), could reasonably be included in Cluster D, with the other LS items comprising a lack of safety skills subscale. Factor 5 contributes little to the explained variance in the rotated factor solution, so removing some of its items would detract little from the results.

In summary, the factor analysis results suggest 4 conceptually meaningful (and statistically significant) components to the PICGA. These include a dominant first component, which was the only significant factor for 20 items (Cluster A, mostly GE/PA items related to gun ownership and gun behavior) and was closely related to another 11 items with significant (and sometimes dominant) shared variance on Component 4 (Cluster B, mostly PA items related to pro-gun opinions and attitudes). Component 2 item loadings indicate a third cluster of items (Cluster C), comprised of 11 items tapping the child's participation in vicarious gun-related experiences. Component 3 loadings indicate a 4th cluster of items (Cluster D), comprised of 8 items related to safety behavior (gun-related and general). Components 1 and 4, which roughly approximate the Gun Exposure and Parental Attitudes subscales, are closely related to one another and not related to Components 2 and 3, which are largely comprised of items that do not share loadings with any other factor. Conceptually, Component 2 approximates a Vicarious Experience subscale, and Component 3 closely matches the Lack of Safety Skills subscale. That neither was related to Gun Experiences or Parental Pro-gun Attitudes in this sample is surprising, and contrary to predicted relationships between gun ownership and vicarious gun-related experiences and between gun ownership and less safety-conscious parenting practices. However, given how little is known about what experiences contribute to gun-related acculturation in children, including Clusters C and D in the PICGA is warranted.

The PICGA factor analysis results suggest that significant portions of the measure (particularly the Gun Experiences subscale) operate differently for gun-owning and non-gun-owning parents (creating a complete separation in the data, or bi-modal distribution). For non-gun-owning parents, most of the items on the Gun Experiences subscale are automatically zero, such that the Gun Experiences subscale of the PICGA does not measure any kind of behavioral variability among non gun owners. For gun-owning parents, the Gun Experiences subscale is more meaningful, as it documents types of guns kept, reasons for keeping them, and parenting practices related to gun ownership, characteristics that may be expected to vary among gun-owning parents. Although a less complete separation of the sample exists for items on the Parental Attitudes subscale, many of these items are closely related to Gun Experiences subscale items and have attendant low variability among non-gun-owners. The Vicarious Experiences subscale and the Lack of Safety Skills subscale, although apparently unrelated to gun ownership in this sample, were constructed to

allow for better variability among both gun-owning and non-gun-owning families, in that the items contributing to these subscales were not directly reliant upon gun ownership to vary. Therefore, given the restricted variability of the Gun Experiences subscale, it is difficult to assess relationships between gun behaviors and vicarious gun experiences from the factor-analytic data alone.

Presented below are correlations between the item subscales and total scale score for the total sample, mean and standard deviation for subscales and total PICGA score (total sample), as well as PICGA item descriptive statistics (frequencies for each item response for the total sample, and for the sample subgroups of gun-owners and non-gun-owners).

PICGA Subscale Correlations (total sample, N=60):

PICGA Subscale		Gun Exposure	Vicarious Exposure	Parent Attitudes	Lack Safety Skills	Child Receptive	PICGA (all subscales)
Gun Exposure	Pearson R	(1.00)	.520**	.811**	-.008^	.374**	.908**
Vicarious Exposure	Pearson R	.520	(1.00)	.589**	-.206^	.490**	.681**
Parent Attitudes	Pearson R	.811	.589	(1.00)	-.081^	.337**	.943**
Lack Safety Skills	Pearson R	-.008	-.206	-.081	(1.00)	-.103^	.056^
Child Receptive	Pearson R	.374	.490	.337	-.103	(1.00)	.503**
PICGA Total	Pearson R	.908	.681	.943	.056	.503	(1.00)

** sig p<.01 (2-tailed) -- * sig p <.05 (2-tailed) ^ indicates non-significant (p-value > .05)

Gun Exposure subscale correlated significantly with the Parent Attitudes subscale (.81), the Vicarious Exposure subscale (.52), and the Child Receptivity subscale (.37). The GE subscale's high correlation with the PICGA total score (.90) reflects both the large proportion of GE items contributing to the total, as well as inter-correlations between the GE subscale and three of the other four subscales contributing to the total. The Parent Attitudes subscale correlated significantly with the Gun Exposure subscale (.81), the Vicarious Exposure subscale (.59), the Child Receptivity subscale (.34), and the PICGA total score (.94). The Vicarious Exposure subscale correlated significantly with the Gun Exposure subscale (.52), the Parent Attitudes subscale (.59), and the Child Receptivity subscale (.49), as well as the PICGA Total (.68). The Lack of Safety Skills subscale did not correlate significantly with any of the other PICGA subscales, nor with the PICGA total score. The Child Receptivity subscale correlated significantly with the Gun Exposure subscale (.37), the Vicarious Exposure subscale (.49), the Parent Attitudes subscale (.34), and the PICGA total score (.50).

II. Descriptive statistics for the PICGA

PICGA Descriptive Statistics

	PICGA (all subscales)	Gun Exposure	Vicarious Exposure	Parent Attitudes	Lack Safety Skills	Child Receptive
N	59	59	59	59	59	59
Mean	67.86	7.68	9.78	22.10	13.24	15.07
Median	55.00	1.00	9.00	19.00	13.00	15.00
Std. Deviation	37.23	12.50	5.38	20.53	5.47	5.06
Range (min-max)	20-176	0-176	1-43	0-75	4-27	4-24

Gun Exposure Subscale

Frequencies - Gun Exposure FFB subscale total / 55

	Total Sample		No guns		Guns	
GE Total Score	N	Percent	N	Percent	N	Percent
0	26	43.3	26	70.3	0	0.0
1-9	16	26.7	10	27.0	6	26.0
10-19	8	13.4	0	0	8	34.6
20-29	2	3.4	0	0	2	8.6
30-39	4	6.8	0	0	4	17.2
40-49	3	5.0	0	0	3	13.0
50-55	0	0.0	0	0	0	0.0
Missing	1	1.7	1	2.7	0	0.0
Total	60	100.0	37	100.00	23	100.00

The items on the Gun Exposure subscale (presented individually below) provide information on gun ownership, storage, and parenting behaviors that directly pertain to a child's level of exposure to real guns in the environment. As the table above indicates, a substantial portion of the sample scored 0 on this subscale (43.3%). The 26 children scoring 0 on the subscale were all in the no-guns group; none of the gun-group respondents scored 0 on this scale. This reflects the fact that most items on the GE scale tap gun ownership directly (e.g., how many guns are at home) or require gun ownership for variations in the behavior (e.g., does child know where guns are kept). This creates a near-complete separation of the data that is reflected in the factor analysis results for these subscales (e.g., the no-guns group cross-correlations cannot be computed because many of the scores are constants, not variables – 0).

Parent Attitudes Subscale:

Parent Attitudes subscale total / 86

	Total Sample		No guns		Guns	
PA Total Score	N	Percent	N	Percent	N	Percent
0	4	6.7	4	10.8	0	0.0
1-9	17	28.3	15	29.7	2	8.6
10-19	10	16.8	8	21.6	2	8.6
20-29	11	18.4	6	16.2	5	21.5
30-39	6	10.0	2	5.4	4	17.3
40-49	3	5.0	1	2.7	2	8.6
50-59	4	6.7	0	0	4	17.3
60-69	2	3.4	0	0	2	8.6
70-79	2	3.4	0	0	2	8.6
80-86	0	0.0	0	0	0	0.0
Missing	1	1.7	1	2.7	0	0.0
Total	60	100.0	37	100.00	23	100.00

The items on the Parent Attitudes subscale (presented individually below) provide information on parental attitudes related to guns, including reasons/motivations for keeping guns, beliefs about how dangerous, fun, and protective guns are, opinions about when to teach children to shoot, and similar items conceptualized as pertaining to the level of attitudinal acculturation in the child's environment. As the table above indicates, scores on this subscale overall were quite low for both gun-owners and non-gun-owners. However, although both score distributions were concentrated at the bottom of the PA scale, this was more pronounced for non-gun-owners, 10.8% of whom scored 0 (in contrast, none of the gun-owners scored 0 on the PA subscale). The restricted range for non-gun-owners (0-41 for non-gun-owners vs. 8-78 for gun-owners) also suggests that this subscale operated differently for gun-owners and non-gun-owners. Although a close relationship between gun ownership and pro-gun attitudes is congruent with conceptual expectations, this relationship may reduce the utility of the PA items in contributing information about gun acculturation beyond parental gun ownership. However, as discussed with the factor analysis results, some items on the PA subscale were more closely related to gun ownership than others—scores on these items are dependent upon gun ownership, much like the items on the GE subscale (e.g., the child cannot know why the parents keep guns if the parents do not keep guns). In the tables below, these items are the ones that show 100% of the non-gun group scoring 0.

Vicarious Exposure Subscale:

Vicarious Exposure FFB subscale total /38

	Total Sample		No guns		Guns	
VE Total Score	N	Percent	N	Percent	N	Percent
0	0	0.0	0	0.0	0	0.0
1-9	31	52.3	21	56.7	10	43.6
10-19	24	39.9	14	35.8	10	43.6
20-29	4	6.8	1	2.7	3	12.8
30-38	0	0.0	0	0.0	0	0.0
Missing	1	1.7	1	2.7	0	0.0
Total	60	100.0	37	100.00	23	100.00

The items on the Vicarious Exposure subscale (shown individually below) were intended to measure the child's exposure to experiences involving vicarious gun images and models that could contribute to the development of gun attitudes and behaviors. Items on the VE subscale (unlike the GE and PA subscales) were not directly dependent on gun ownership for score variability. Indeed, as seen below, many of the VE subscale items have similar score distributions for gun-owning and non-gun-owning groups. One interesting aspect of VE subscale is that its items provide descriptive data on the prevalence of gun-related play and media behaviors of children whose parents were highly educated and apparently exceptionally safety-conscious. These parents would be expected to restrict television viewing, especially violent programming, and would similarly be expected to discourage gun-related play (e.g., with toy guns). However, even among these families it was typical for children to watch TV for at least an hour on most school days, to watch violent programs at least occasionally, and to have available multiple toy guns for imaginary gun play. Although these children were less exposed to violent media than the literature suggest is typical for American children, the level of exposure in this sample, especially given their young age and the education level of their parents, demonstrates how pervasive media exposure has become for children. (One analysis not proposed –and not yet run—but of potential interest would be to look at the correlation between child age and higher scores on the VA subscale. It seems likely that greater exposure to violent media content is related to older child age. Lots of interesting information exists on the potential relationship between exposure to violent media and the development of aggressive behavior in children, which would allow for good discussion points surrounding further analyses of the VE data.)

Lack Safety Skills subscale:

Lack Safety Skills subscale total / 38

	Total Sample		No guns		Guns	
VE Total Score	N	Percent	N	Percent	N	Percent
0	0	0.0	0	0.0	0	0.0
1-9	15	25.0	11	29.7	4	17.3
10-19	36	59.7	20	54.0	16	69.2
20-29	8	13.6	5	2.7	3	13.5
30-38	0	0.0	0	0.0	0	0.0
Missing	1	1.7	1	2.7	0	0.0
Total	60	100.0	37	100.00	23	100.00

The items on the Lack of Safety Skills subscale (shown individually below) concern safety-related parenting behaviors, both general and specific to guns. Items on the LS subscale are reverse-scored (so that higher scores indicate riskier behavior). Although some items on this subscale are related to gun safety, none is directly dependent on gun ownership for score variability. The parents in this sample reported themselves to be remarkably safety-conscious. Although a somewhat higher than average rate of safety behavior would be expected in this highly educated sample relative to the general population, the LS subscale is also the subscale most likely to be vulnerable to social desirability effects (i.e., parents could exaggerate safety-conscious behavior because this behavior is seen as socially desirable or indicative of good parenting). Some evidence suggests that parents are not especially accurate reporters of their own safety behavior, and it is even more likely that they over-estimate their children's safety skills (e.g., see results for "Does your child know how to dial 911 for help in an emergency?"). Items likely to be least prone to exaggeration are very specific/ well-operationalized behavioral items like "Have you ever discussed gun safety with a health professional?" and "Have you ever practiced 911 or other emergency response skills (e.g., home fire drill) with your child?" These items, unlike the others on the LS subscale, do not require parents to choose from subjective scales (e.g., very rarely to very often) in providing an estimate of their safety behavior. The two specific behavioral items show much lower rates of endorsement in the sample, but may represent a more realistic estimate of the degree to which these parents were focused on safety training with their children.

Additional analyses of the LS scale not proposed (and not performed) but of potential interest include descriptive data of parents' (unscored) responses to qualitative acculturation items like "Which of the following safety statements have you said to your child?" in order to identify which statements were most popular, whether these statements relate to gun status, age or gender, etc. (These acculturative items are presented here only as they were scored for PICGA analyses, which were quantified scores based on the number of statements endorsed irrespective of which subset of statements a parent chose. This is another example of how the PICGA measurement model does not match its conceptual framework, in that we would expect what parents say about guns to be more important than the number of different gun-related statements they make.) Similarly, exploratory analyses to examine commonalities among parents who have taken gun safety classes could be of interest, especially given that so many of the gun-trained parents did not keep guns at home. This finding is another of several clues suggesting a very high level of gun-related acculturation among the parents of the sample (as opposed to the children), which begs the question of an inter-generational acculturative shift. The question of how children who grow up around guns later decide whether to be gun-involved parents must be left to other studies, but one lesson of this initial PICGA investigation may be that asking parents directly about their parenting decisions and behaviors related to guns (as opposed to their attitudes or their own acculturative experiences) will provide a more accurate index of the child's acculturative experiences.

Notably missing from the PICGA are questions asking parents to describe their parenting rules or philosophies related to guns. This oversight is most glaring on the LS subscale, because many parent-child interactions (those with the greatest acculturative power) about guns will involve gun safety. The broadest example of this type of missing question, which would be an LS subscale item, is "how do you keep your child safe from guns?" A narrower question would be, "What specific safety rules do you have for your child and guns?" One of the few empirical demonstrations of acculturative parenting behavior involves the acculturation of safety behavior; this alone suggests a focus on gun safety behavior as a major part of early gun acculturation.

Child Receptivity subscale:

Child Receptivity subscale total / 38

	Total Sample		No guns		Guns	
CR Total Score	N	Percent	N	Percent	N	Percent
0	0	0.0	0	0.0	0	0.0
1-9	10	16.7	7	18.9	3	12.9
10-19	34	56.6	21	56.8	13	57.0
20-29	15	25.0	8	21.6	7	30.1
30-38	0	0.0	0	0.0	0	0.0
Missing	1	1.7	1	2.7	0	0.0
Total	60	100.0	37	100.00	23	100.00

The items on the Child Receptivity subscale (shown individually below) were intended to provide an index of characteristics that could be expected to produce increased responsiveness to gun-related acculturative information on the part of a child, including aggression, impulsivity, and other externalizing behavior problems, an interest in guns, a lack of fear of guns, and a preference for violent media. This subscale did not work as intended (as reflected in the factor analysis results). However, it is unknown how the subscale items would perform in a sample of children with a higher rate of behavior problems. Very few children were described by their parents as having any significant behavior problems (these items separated from all other CR items in factor analyses), children of gun-owners were rated as less afraid of guns than children of non-gun-owning parents (an interesting but difficult to interpret finding), and items involving interests and preferences loaded with VE items, reflecting the influence of these preferences on rates of related behaviors. Overall, the CR subscale, although intended to represent factors likely to increase gun acculturation, is not well-conceptualized in that it over-estimated the separateness of this "child" contribution from other indicators of gun acculturation. The PICGA necessarily includes items that involve transactional parent-child-environment influences throughout the measure. For example, how often the parent keeps a loaded handgun, although a parent behavior, is likely related to environmental parameters and child factors like age and perhaps even temperament (the focus of CR items). Thus, the CR subscale constituted a misguided effort to isolate one set of child-dominated contributors.

III. PICGA Item frequencies for total sample, gun-owning group, and non-gun-owning group:

How many handguns are kept at home? 0-4

		Total Sample		No guns		Guns	
Responses	score	N	Percent	N	Percent	N	Percent
No handguns	0	44	73.3	37	100.0	7	30.4
1 handgun	1	5	8.3	0	0.0	5	21.7
2-3 handguns	2	6	10.0	0	0.0	6	26.1
4-5 handguns	3	2	3.3	0	0.0	2	8.7
> 5 handguns	4	3	5.0	0	0.0	3	13.0
	Total	60	100.0	37	100.00	23	100.00

How often is handgun kept quickly accessible? 0-5

		Total Sample		No guns		Guns	
Responses	score	N	Percent	N	Percent	N	Percent
N/A or Never	0	52	86.7	37	100.0	15	65.2
Very rarely/rarely	2	1	1.7	0	0.0	1	4.3
Sometimes	4	2	3.3	0	0.0	2	8.7
Often/very often	5	5	8.3	0	0.0	5	21.7
	Total	60	100.0	37	100.00	23	100.00

How often is handgun kept loaded? 0-4

		Total Sample		No guns		Guns	
Responses	score	N	Percent	N	Percent	N	Percent
N/A or Never	0	53	88.3	37	100.0	16	69.6
Very rarely/rarely	1	3	5.0	0	0.0	3	13.0
Sometimes	2	1	1.7	0	0.0	1	4.3
Often/very often	4	3	5.0	0	0.0	3	13.0
	Total	60	100.0	37	100.0	23	100.0

Does child know handguns are kept at home? 0-2

		Total Sample		No guns		Guns	
Responses	score	N	Percent	N	Percent	N	Percent
N/A or No	0	45	75.0	37	100.0	8	34.8
Yes	2	15	25.0	0	0.0	15	65.2
	Total	60	100.0	37	100.00	23	100.00

Does child know where handguns are kept? 0-2

		Total Sample		No guns		Guns	
Responses	score	N	Percent	N	Percent	N	Percent
N/A or No	0	49	81.7	37	100.0	12	52.2
DK	1	2	3.3	0	0.0	2	8.7
Yes	2	9	15.0	0	0.0	9	39.1
	Total	60	100.0	37	100.00	23	100.00

How many long guns are kept at home? 0-4

		Total Sample		No guns		Guns	
Responses	score	N	Percent	N	Percent	N	Percent
No long guns	0	40	66.7	37	100.0	3	13.0
1 long guns	1	2	3.3	0	0.0	2	8.7
2-3 long guns	2	5	8.3	0	0.0	5	21.7
4-5 long guns	3	6	10.0	0	0.0	6	26.1
> 5 long guns	4	7	11.7	0	0.0	7	30.4
	Total	60	100.0	37	100.00	23	100.00

How often is long gun kept quickly accessible? 0-5

		Total Sample		No guns		Guns	
Responses	score	N	Percent	N	Percent	N	Percent
N/A or Never	0	49	81.7	37	100.0	12	52.2
Very rarely/rarely	2	6	10.0	0	0.0	6	26.1
Sometimes	4	1	1.7	0	0.0	1	4.3
Often/Very often	5	4	6.7	0	0.0	4	17.4
	Total	60	100.0	37	100.00	23	100.00

How often is long gun kept loaded? 0-4

		Total Sample		No guns		Guns	
Responses	score	N	Percent	N	Percent	N	Percent
N/A or never	0	52	86.7	37	100.0	15	65.2
Very rarely/rarely	1	6	10.0	0	0.0	6	26.1
Sometimes	2	1	1.7	0	0.0	1	4.3
Often/Very often	4	1	1.7	0	0.0	1	4.3
	Total	60	100.0	37	100.00	23	100.00

Does child know long guns are kept at home? 0-2

		Total Sample		No guns		Guns	
Responses	score	N	Percent	N	Percent	N	Percent
N/A or No	0	43	71.7	37	100.0	6	26.1
DK	1	2	3.3	0	0.0	2	8.7
Yes	2	15	25.0	0	0.0	15	65.2
	Total	60	100.0	37	100.00	23	100.00

Does child know where long gun is kept? 0-2

		Total Sample		No guns		Guns	
Responses	score	N	Percent	N	Percent	N	Percent
N/A or No	0	44	73.3	37	100.0	7	30.4
DK	1	1	1.7	0	0.0	1	4.3
Yes	2	15	25.0	0	0.0	15	65.2
	Total	60	100.0	37	100.00	22	100.00

How many non-powder guns are kept at home (e.g., bb-guns)? 0-3

		Total Sample		No guns		Guns	
Responses	score	N	Percent	N	Percent	N	Percent
No bbguns	0	44	73.3	35	94.6	9	39.1
1 bb gun	1	11	18.3	2	5.4	9	39.1
2-3 bb guns	2	3	5.0	0	0.0	3	13.0
4 or more	3	2	3.3	0	0.0	2	8.7
	Total	60	100.0	37	100.00	23	100.00

How often does child see adults handle guns? 0-5

		Total Sample		No guns		Guns	
Responses	score	N	Percent	N	Percent	N	Percent
Never	0	35	58.3	28	75.7	7	30.4
Very Rarely	1	9	15.0	7	18.9	2	8.7
Rarely	2	4	6.7	0	0.0	4	17.4
Sometimes	3	7	11.7	1	2.7	6	26.1
Often	4	1	1.7	0	0.0	1	4.3
Very Often	5	3	5.0	0	0.0	3	13.0
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

How often does child handle guns w close supervision? 0-6

		Total Sample		No guns		Guns	
Responses	score	N	Percent	N	Percent	N	Percent
Never	0	48	80.0	34	91.9	14	60.9
Very Rarely /rarely	2	5	8.3	2	5.4	3	13.0
Sometimes	4	4	6.7	0	0.0	4	17.4
Often	5	1	1.7	0	0.0	1	4.3
Very Often	6	1	1.7	0	0.0	1	4.3
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

How often does child go to gun shops/shows? 0-4

		Total Sample		No guns		Guns	
Responses	score	N	Percent	N	Percent	N	Percent
Never	0	50	83.3	34	91.9	16	69.6
Very Rarely /rarely	1	4	6.7	1	2.7	3	13.0
Sometimes	2	1	1.7	0	0.0	1	4.3
Often	3	2	3.3	1	2.7	1	4.3
Very Often	4	2	3.3	0	0.0	2	8.7
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

How often does child go hunting or shooting? 0-5

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Never	0	45	75.0	32	86.5	13	56.5
Very Rarely	1	7	11.7	4	10.8	3	13.0
Rarely	2	1	1.7	0	0.0	1	4.3
Sometimes	3	2	3.3	0	0.0	2	8.7
Often	4	3	5.0	0	0.0	3	13.0
Very Often	5	1	1.7	0	0.0	1	4.3
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

Why are handguns kept at home? Score 0-9, Reasons: Protection + 5, Hunting/Sport +1, Collecting +1, Tradition +1, Patriotism +1

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
N/A no handguns	0	44	73.3	37	100.0	7	30.4
1 reason, not protection	1	0	0.0	0	0.0	0	0.0
2 reasons, not protection	2	3	5.0	0	0.0	3	13.0
3 reasons, not protection	3	0	0.0	0	0.0	0	0.0
4 reasons, not protection	4	0	0.0	0	0.0	0	0.0
Protection only	5	0	0.0	0	0.0	0	0.0
Protection + 1	6	5	8.3	0	0.0	5	21.7
Protection + 2	7	2	3.3	0	0.0	2	8.7
Protection + 3	8	3	5.0	0	0.0	3	13.0
Protection + 4	9	3	5.0	0	0.0	3	13.0
	Total	60	100.0	37	100.00	23	100.00

Does child know why handguns are kept at home? 0-3

		Total Sample		No guns		Guns	
Responses	score	N	Percent	N	Percent	N	Percent
N/A no handguns	0	44	73.3	37	100.0	7	30.4
No	1	2	3.3	0	0.0	2	8.7
DK	2	3	5.0	0	0.0	3	13.0
Yes	3	11	18.3	0	0.0	11	47.8
	Total	60	100.0	37	100.00	23	100.00

Why are long guns kept at home? Score 0-9, Reasons: Protection + 5, Hunting/Sport +1, Collecting +1, Tradition +1, Patriotism +1

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
N/A no long guns	0	40	66.7	37	100.0	3	13.0
1 reason, not protection	1	6	10.0	0	0.0	6	26.1
2 reasons, not protection	2	6	10.0	0	0.0	6	26.1
3 reasons, not protection	3	0	0.0	0	0.0	0	0.0
4 reasons, not protection	4	2	3.3	0	0.0	2	8.7
Protection only	5	0	0.0	0	0.0	0	0.0
Protection + 1	6	2	3.3	0	0.0	2	8.7
Protection + 2	7	2	3.3	0	0.0	2	8.7
Protection + 3	8	1	1.7	0	0.0	1	4.3
Protection + 4	9	1	1.7	0	0.0	1	4.3
	Total	60	100.0	37	100.00	23	100.00

Does child know why long guns are kept at home? 0-3

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
N/A no long guns	0	40	66.7	37	100.0	3	13.1
No	1	3	5.0	0	0.0	3	13.1
DK	2	3	5.0	0	0.0	3	13.1
Yes	3	14	23.3	0	0.0	14	60.7
	Total	60	100.0	37	100.0	23	100.0

How often does child spend time or stay over at homes of friends or relatives with guns? 0-3

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Never	0	21	35.0	16	43.2	5	21.7
DK	1	26	43.4	18	48.6	8	34.8
Very rarely/Rarely	2	11	18.3	2	5.4	9	39.1
Sometimes	3	1	1.7	0	0.0	1	4.3
Often /Very often	4	0	0.0	0	0.0	0	0.0
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

Does any adult in household belong to gun club or gun-rleated organization? 0-2

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
No	0	56	93.3	36	97.3	20	87.0
DK	1	1	1.7	0	0.0	1	4.3
Yes	2	2	3.3	0	0.0	2	8.7
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

How useful is a handgun for home and personal protection if it is kept loaded and quickly accessible? 0-5

0-9 Lickert Scale		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Not at all useful (0)	0	22	36.7	16	43.2	6	26.1
Very little (1-2)	1	17	28.3	12	32.4	5	21.7
A little useful (3-4)	2	4	6.7	3	8.1	1	4.3
Somewhat useful (5-6)	3	3	5.0	2	5.4	1	4.3
Very useful (7-8)	4	7	11.7	3	8.1	4	17.4
Extremely useful (9)	5	6	10.0	0	0.0	6	26.1
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

Difference scores – how much more useful is a handgun for protection when loaded and quickly accessible than when unloaded and put away? (0-9)

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
No difference in how useful	0	32	53.3	23	62.2	9	39.1
1 point more useful loaded/acc	1	7	11.7	6	16.2	1	4.3
2 points more useful loaded/acc	2	7	11.7	4	10.8	3	13.0
3 points more useful loaded/acc	3	4	6.7	1	2.7	3	13.0
4 points more useful loaded/acc	4	1	1.7	1	2.7	0	0.0
5 points more useful loaded/acc	5	3	5.0	1	2.7	2	8.7
6 points more useful loaded/acc	6	2	3.3	0	0.0	2	8.7
7 points more useful loaded/acc	7	2	3.3	0	0.0	2	8.7
8 points more useful loaded/acc	8	1	1.7	0	0.0	1	4.3
9 points more useful loaded/acc	9	0	0.0	0	0.0	0	0.0
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

How dangerous are guns? 0-5

0-9 Lickert scale		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Extremely dangerous (9)	0	36	60.0	24	64.9	12	52.2
Very dangerous (7-8)	1	11	18.3	8	21.6	3	13.0
Somewhat dangerous (5-6)	2	8	13.3	3	8.1	5	21.7
A little dangerous (3-4)	3	2	3.3	1	2.7	1	4.3
Very little danger (1-2)	4	1	1.7	0	0.0	1	4.3
Not at all dangerous (0)	5	1	1.7	0	0.0	1	4.3
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

How fun are guns? 0-5

0-9 Lickert scale		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Not at all fun (0)	0	27	45.0	24	64.9	3	13.0
Very little fun (1-2)	1	7	11.7	3	8.1	4	17.4
A little fun (3-4)	2	11	18.3	5	13.5	6	26.1
Somewhat fun (5-6)	3	5	8.3	3	8.1	2	8.7
Very fun (7-8)	4	9	15.0	1	2.7	8	34.8
Extremely fun (9)	5	0	0.0	0	0.0	0	0.0
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

At what age did parent first learn to shoot? (0-10)

		Total Sample		No guns		Guns	
Responses	score	N	Percent	N	Percent	N	Percent
Never learned	0	25	41.7	22	59.5	3	13.0
Age 18 or older	5	10	16.7	3	8.1	7	30.4
Before age 18	10	24	40.0	11	29.7	13	56.5
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

What is the best age to teach a child to shoot? (0-10)

		Total Sample		No guns		Guns	
Responses	score	N	Percent	N	Percent	N	Percent
Never /over 18	0	22	36.7	19	51.4	3	13.0
Varies/ teen 13-18	5	21	35.0	13	35.1	8	34.8
Age 12 or younger	10	17	28.3	5	13.5	12	52.2
	Total	60	100.0	37	100.00	23	100.00

What is the best age to give a child his/her first gun? (0-10)

		Total Sample		No guns		Guns	
Responses	score	N	Percent	N	Percent	N	Percent
Never /over 18	0	42	70.0	31	83.8	11	47.8
Varies/ teen 13-18	5	10	16.7	4	10.8	6	26.1
Age 12 or younger	10	8	13.3	2	5.4	6	26.1
	Total	60	100.0	37	100.00	23	100.00

Number of endorsed gun acculturation statements from list of 5– (e.g., guns are for hunting animals, guns are for adults only) 0-5

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
0 gun statements endorsed	0	16	26.7	13	35.1	3	13.0
1 gun statement endorsed	1	18	30.0	15	40.5	3	13.0
2 gun statements endorsed	2	8	13.3	4	10.8	4	17.4
3 gun statements endorsed	3	13	21.7	4	10.8	9	39.1
4 gun statements endorsed	4	4	6.7	1	2.7	3	13.0
5 gun statements endorsed	5	1	1.7	0	0.0	1	4.3
	Total	60	100.0	37	100.00	23	100.00

Has parent spoken do child about what to do if an intruder attempts to break into the home? 0-1

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
No	0	45	75.0	27	73.0	18	78.3
Yes	1	14	23.3	9	24.3	5	21.7
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

How many toy guns (water shooters or molded plastic toys that don't shoot) are there at home?

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
0 toy guns	0	15	25.0	13	35.1	2	8.7
1 toy gun	1	11	18.3	4	10.8	7	30.4
2 or 3 toy guns	2	6	10.0	5	13.5	1	4.3
4 or 5 toy guns	3	16	26.7	11	29.7	5	21.7
More than 5 toy guns	4	12	20.0	4	10.8	8	34.8
	Missing	0	0.0	0	0.0	0	0.0
	Total	60	100.0	37	100.00	23	100.00

How often does child watch TV? 0-4

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Never	0	6	10.0	4	10.8	2	8.7
1 day/ week or less often	1	9	15.0	4	10.8	5	21.7
2 or 3 days / week	2	7	11.7	6	16.2	1	4.3
4 or 5 days / week	3	25	41.7	15	40.5	10	43.5
Almost everyday (6-7 days)	4	12	20.0	7	18.9	5	21.7
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

How many hours of TV does child watch on typical school day? 0-6

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
1 hour or less	0	26	43.3	18	48.6	8	34.8
1-2 hours	1	22	36.7	12	32.4	10	43.5
2-3 hours	2	6	10.0	4	10.8	2	8.7
3-4 hours	3	4	6.7	1	2.7	3	13.0
4-5 hours	4	0	0.0	0	0.0	0	0.0
5-6 hours	5	0	0.0	0	0.0	0	0.0
More than 6 hours	6	1	1.7	1	2.7	0	0.0
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

How often does child watch TV shows with guns or shooting? 0-5

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Never	0	7	11.7	5	13.5	2	8.7
Very rarely	1	22	36.7	13	35.1	9	39.1
Rarely	2	6	10.0	3	8.1	3	13.0
Sometimes	3	19	31.7	12	32.4	7	30.4
Often	4	4	6.7	2	5.4	2	8.7
Very often	5	1	1.7	1	2.7	0	0.0
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

How often does child play video games? 0-4

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Never	0	32	53.3	19	51.4	13	56.5
1 day/ week or less often	1	14	23.3	12	32.4	2	8.7
2 or 3 days / week	2	1	1.7	0	0.0	1	4.3
4 or 5 days / week	3	7	11.7	3	8.1	4	17.4
Almost everyday (6-7 days)	4	5	8.3	2	5.4	3	13.0
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

How many hours does child spend playing video games on a typical school day? 0-6

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
1 hour or less	0	47	78.3	30	81.1	17	73.9
1-2 hours	1	12	20.0	6	16.2	6	26.1
2-3 hours	2	0	0.0	0	0.0	0	0.0
3-4 hours	3	0	0.0	0	0.0	0	0.0
4-5 hours	4	0	0.0	0	0.0	0	0.0
5-6 hours	5	0	0.0	0	0.0	0	0.0
More than 6 hours	6	0	0.0	0	0.0	0	0.0
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

How often does child play video games with guns or shooting? 0-6

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Never	0	34	56.7	23	62.2	11	47.8
Very rarely	1	12	20.0	6	16.2	6	26.1
Rarely	2	1	1.7	1	2.7	0	0.0
Sometimes	3	9	15.0	5	13.5	4	17.4
Often	4	1	1.7	1	2.7	0	0.0
Very often	5	1	1.7	0	0.0	1	4.3
Everyday	6	1	1.7	0	0.0	1	4.3
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

How often does child play imaginary or pretend games with guns or shooting? 0-5

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Never	0	14	23.3	8	21.6	6	26.1
Very rarely	1	15	25.0	9	24.3	6	26.1
Rarely	2	9	15.0	8	21.6	1	4.3
Sometimes	3	12	20.0	8	21.6	4	17.4
Often	4	7	11.7	3	8.1	4	17.4
Very often	5	2	3.3	0	0.0	2	8.7
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

Has any adult in the household had gun safety training/taken a class on safe shooting? 0-4

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Yes, have had gun safety training	0	24	40.0	11	29.7	13	56.5
No gun training, no guns	2	25	45.0	25	67.6	0	0.0
No gun training, keep guns	4	10	13.3	0	0.0	10	43.5
Missing	.	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

Has parent talked to doctor or other health professional about gun safety? 0-2

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Yes	0	6	10.0	5	13.5	1	4.3
Don’t know	1	1	1.7	0	0.0	1	4.3
No	2	52	86.7	31	83.8	21	91.3
Missing	.	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

How often does parent talk to child about gun safety? 0-3

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Very often/ often	0	13	21.7	4	10.8	9	39.1
Occasionally	1	17	28.3	9	24.3	8	34.8
Rarely/very rarely	2	22	36.7	16	43.2	6	26.1
Never	3	7	11.7	7	18.9	0	0.0
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

Number of gun safety statements endorsed by parent as having been said to child. 0-5

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
All 5 gun safety statements	0	28	46.7	18	48.6	10	43.5
4 of 5 gun safety stmnts	1	9	15.0	7	18.9	2	8.7
3 of 5 gun safety stmnts	2	8	13.3	5	13.5	3	13.0
2 of 5 gun safety stmnts	3	10	16.7	3	8.1	7	30.4
1 of 5 gun safety stmnts	4	2	3.3	1	2.7	1	4.3
0 gun safety statements	5	3	5.0	3	8.1	0	0.0
	Missing	0	0.0	0	0.0	0	0.0
	Total	60	100.0	37	100.00	23	100.00

How often does parent talk to child about how to respond in an emergency? 0-3

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Very often/ often	0	13	21.7	12	32.4	1	4.3
Occasionally	1	38	63.3	19	51.4	19	82.6
Rarely/very rarely	2	7	11.7	5	13.5	2	8.7
Never	3	2	3.3	1	2.7	1	4.3
	Missing	0	0.0	0	0.0	0	0.0
	Total	60	100.0	37	100.00	23	100.00

Number of crisis situations (emergencies) parent endorsed as having discussed with child how to respond. 0-7

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
All 7 crisis response talks	0	11	18.3	7	18.9	4	17.4
6 of 7 crisis response talks	1	8	13.3	4	10.8	4	17.4
5 of 7 crisis response talks	2	6	10.0	4	10.8	2	8.7
4 of 7 crisis response talks	3	11	18.3	7	18.9	4	17.4
3 of 7 crisis response talks	4	10	16.7	7	18.9	3	13.0
2 of 7 crisis response talks	5	5	8.3	2	5.4	3	13.0
1 of 7 crisis response talks	6	3	5.0	3	8.1	0	0.0
No crisis response talks	7	6	10.0	3	8.1	3	13.0
	Missing	0	0.0	0	0.0	0	0.0
	Total	60	100.0	37	100.00	23	100.00

Does child know how to dial 911 for help in an emergency? 0-2

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Yes	0	51	85.0	29	78.4	22	95.7
Don't know	1	4	6.7	4	10.8	0	0.0
No	2	4	6.7	3	8.1	1	4.3
Missing	.	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

Does child know his/her full name, address, and telephone number? 0-2

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Yes	0	45	75.0	26	70.3	19	82.7
Don't know	1	2	3.3	1	2.7	1	4.3
No	2	12	20.0	9	24.3	3	13.0
Missing	.	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

Has parent ever practiced how to dial 911 with child? 0-2

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Yes	0	27	45.0	17	45.9	10	43.5
Don't know	1	2	3.3	1	2.7	1	4.3
No	2	30	50.0	18	48.6	12	52.2
Missing	.	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

How interested in guns is this child? 0-4

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Not at all interested	0	21	35.0	15	40.5	6	26.1
A little interested	1	17	28.3	10	27.0	7	30.4
Somewhat interested	2	12	20.0	9	24.3	3	13.0
Very interested	3	5	8.3	2	5.4	3	13.0
Extremely interested	4	4	6.7	0	0.0	4	17.4
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.0	23	100.0

How afraid of guns is this child? 0-4

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Extremely afraid	0	10	16.7	8	21.6	2	8.7
Very afraid	1	4	6.7	4	10.8	0	0.0
Somewhat afraid	2	17	28.3	10	27.0	7	30.4
A little afraid	3	12	20.0	7	18.9	5	21.7
Not at all afraid	4	16	26.7	7	18.9	9	39.1
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.0	23	100.0

How often is child difficult to manage, stubborn, or uncooperative? 0-4

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Never	0	3	5.0	1	2.7	2	8.7
Very rarely	1	21	35.0	14	37.8	7	30.4
Rarely	2	12	20.0	7	18.9	5	21.7
Sometimes	3	19	31.7	11	29.7	8	34.8
Often	4	4	6.7	3	8.1	1	4.3
Very often	5	0	0.0	0	0.0	0	0.0
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.0	23	100.0

How often is child angry, has a temper, throws tantrums, or acts aggressively? 0-4

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Never	0	4	6.7	1	2.7	3	13.0
Very rarely	1	23	38.3	13	35.1	10	43.5
Rarely	2	12	20.0	9	24.3	3	13.0
Sometimes	3	16	26.7	12	32.4	4	17.4
Often	4	4	6.7	1	2.7	3	13.0
Very often	5	0	0.0	0	0.0	0	0.0
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

How often is child impulsive or acts without thinking things through first? 0-5

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Never	0	3	5.0	2	5.4	1	4.3
Very rarely	1	6	10.0	3	8.1	3	13.0
Rarely	2	12	20.0	7	18.9	5	21.7
Sometimes	3	33	55.0	20	54.1	13	56.5
Often	4	4	6.7	3	8.1	1	4.3
Very often	5	1	1.7	1	2.7	0	0.0
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

How often does child act wild, do daredevil things, or take risks? 0-5

		Total Sample		No guns		Guns	
Responses	Score	N	Percent	N	Percent	N	Percent
Never	0	8	13.3	4	10.8	4	17.4
Very rarely	1	20	33.3	14	37.8	6	26.1
Rarely	2	10	16.7	4	10.8	6	26.1
Sometimes	3	15	25.0	9	24.3	6	26.1
Often	4	4	6.7	3	8.1	1	4.3
Very often	5	2	3.4	2	5.4	0	0.0
	Missing	1	1.7	1	2.7	0	0.0
	Total	60	100.0	37	100.00	23	100.00

Does the child have older siblings? 0-2

Responses	Score	Total Sample N	Total Sample Percent	No guns N	No guns Percent	Guns N	Guns Percent
No	0	36	60.0	26	70.3	10	43.5
Yes	2	23	38.3	10	27.0	13	56.5
Missing	.	1	1.7	1	2.7	0	0.0
Total		60	100.0	37	100.00	23	100.00

Does the child prefer violent games or TV shows? 0-3

Responses	Score	Total Sample N	Total Sample Percent	No guns N	No guns Percent	Guns N	Guns Percent
No	0	40	66.7	24	64.9	16	69.6
DK	1	11	18.3	7	18.9	4	17.4
Yes	3	8	13.3	5	13.5	3	13.0
Missing	.	1	1.7	1	2.7	0	0.0
Total		60	100.0	37	100.00	23	100.00

Appendix C: Children's "What would you do?" scenario and interview responses:

Responses to the defensive gun-access scenario were originally conceptualized as falling into six categories: 1. optimal help-seeking responses (call 911/parents), 2. less optimal help-seeking responses (call friends, run to neighbors); 3. passive responses (hide, avoid the problem, ignore it, or panic), 4. confrontative responses (approaching or aggressing against the intruder, without reference to a gun), 5. non-confrontative gun responses (hide with the gun, get the gun and call for help), and 6. confrontative gun responses (approaching or aggressing against the intruder, with reference to a gun). Of 114 responses (2 for each of 57 subjects), 106 were immediately identifiable as falling into one of the 6 predicted categories. However, 8 responses were not immediately classifiable, because they constituted behaviors that were attempts to secure the house from intrusion (a strategy we had not anticipated) without reference to other already categorizable behaviors. These 8 responses included locking the front door or exterior doors of the house (already locked in the story, 6 responses) and setting traps to thwart an intruder's progress (2 responses).

The table below shows responses given by the 12 children who mentioned locking doors and/or setting traps. Uncategorized responses are in bold.

Particip. #	1st resp cat	2nd resp cat	1st resp	2nd resp
43	?	2	**lock door**	hide
60	?	2	**lock door**	hide
36	2	2	lock door and hide	hide
27	2	2	lock brm door and hide there	hide (in kitchen)
72	?	2	**lock doors**	hide (in attic)
25	?	3	**lock doors**	look outside/flashlight
31	2	2	shut blinds	lock door, turn on TV

29	1	?	call mom	**lock doors**
56	1	?	call mom	**lock doors**
13	2	?	lock door, stay inside	**turn fire on (trap to keep man out)**
54	6	2	traps +gun(prepbattle)	run to room to hide
12	2	?	hide	**set traps (describes)**

Of 24 total responses (2 per child) in this matrix, 8 were initially uncategorized (4 first responses and 4 second responses; no child gave two uncategorized responses). Already categorized responses included 12 passive responses (9 cases of hiding, as well as "shut blinds," "lock doors and turn on TV," and "lock door and stay inside"), 2 competent responses ("call mom"), 1 investigate/approach response ("look outside with flashlight"), and 1 aggressive gun response ("prepare for battle—make barricade, put out traps, get gun"). Thus most of the children who gave a "lock doors" response were otherwise passive responders. Additionally, of 10 responses that involved locking doors, 4 had already been classified as passive based on the plan's other elements—"lock door and *hide*," and "lock bedroom door and *hide* there" as well as "lock door and *turn on TV*," and "lock door and *stay inside"* (both behaviors included in original examples of passive responses that do not represent attempts to alter or resolve the situation). Based on these results and conceptual considerations, "locking doors" fits most appropriately in the passive response category.

Three children gave responses that involved setting traps and/or barricades to keep the intruder out or thwart his progress (2 second responses and one first response). The first response including trap setting was already categorized as a gun response because it included accessing the gun as part of an elaborate plan to "prepare for battle." The remaining (second) responses did not involve the gun and were initially uncategorized. One child described detailed plans for traps involving paint cans swinging from the ceiling and thumb tacks spread out on the floor as his second plan, which was an elaboration of his first plan (to hide). The other said that he would "turn the fire on" in the fireplace in case the intruder tried to come down the chimney, which was also an elaboration of his first plan (lock the doors and stay inside). Thus, both children who gave uncategorized "set traps" second responses gave passive first responses. Furthermore, the child who gave as his first response the (already categorized) gun response that involved setting traps gave "run to room to hide" as his second response (it was unclear whether this plan was in

addition to the preparation for battle or an alternative to it). Thus "setting traps" responses were clearly associated with other behaviors categorized as passive (hiding, staying inside), and seem conceptually to be particularly dangerous elaborations on hiding. However, setting traps is unlike hiding in that setting traps has an aggressive intention (however indirect); this is reflected in one trap-setter's description of his plan as "preparing for battle." However, unlike other aggressive plans, trap setting does not entail approaching the intruder, but is intended as one more way to keep the intruder away from the child. Thus, categorizing plans to set traps as either aggressive or passive is problematic. For the purpose of categorizing responses, the two "set traps" second responses will be counted with other aggressive plans that entail intended harm to the intruder.

1. Safe&Effective Active/Assertive Responses were conceptualized as *responses congruent with crisis-response guidelines for children in this type of situation, which entail getting effective help quickly without exposing the child to further threats, e.g., call 911, phone for help (prompt: who would you call?), phone Mom (or Dad), call neighbor on the phone, call the police, call the Operator (dial "0").*

Response	Total # responses	1st responses	2nd responses
call 911	6	4	2
call police	13	6	7
subtotal police/911	19	9	9
call Mom	15	10	5
call Mom, then police	1	1	0
call Dad	3	1	2
call parents	2	0	2
subtotal parents	21	12	9
Total # optimal	40	22	18
# children offering optimal responses	both plans - 9	1st plan only - 13	2nd plan only- 9

2. Less Optimal Active/Assertive Responses are responses that are not congruent with crisis-response guidelines even though they are intended to attract or obtain help without confronting the intruder, e.g., call my friend, yell/scream for help, run over to neighbor's, run outside screaming help, run to corner store. Category 2 plans were rare, being offered only 5 times total (one first response and 4 second responses). These responses included (in bold, given with paired response by each child):

Response 1	Response 2	1st rsp cat	2nd rsp cat
Call mom	**Call friends**	1	2
Call mom	**Run away, find an adult**	1	2
Leave house (go for help)	Call police	2	1
Call police	**Run to neighbor**	1	2
Call police	**Run to police**	1	2
Total non-optimal help-seek responses	5		
# children offering optimal responses	Both plans - 0 1st plan only – 1 2nd plan only - 4		

In four of five cases, category 2 responses were offered as alternative plans by children who had offered optimal help-seeking responses as their first plan. In the remaining case, the child who gave "leave house" (to go for help) as a first response gave "call police" as his/her alternate plan. When asked to choose which offered plan was best, all five children chose the optimal (category 1) response. These results suggest that in this sample, category 2 responders were very similar in their response patterns to children who offered two category 1 responses.

3. Passive Responses are responses that indicate *avoiding the problem, pretending it isn't happening, delaying making a decision or response, or strategies the child hopes will keep the intruder from seeing him or finding him, e.g., nothing, I can't think of anything, I'd just stand there, I'd be frozen, wait and see what happens, keep watching out window to see if I see him again, stop and think, try to calm down, hide,*

close my eyes, go back to bed, go to sleep, cry, pinch myself because I must be dreaming, read a book, watch TV, turn on all the lights.

Of these anticipated passive responses, hiding was by far the most prevalent, with 20 total responses (7 first responses and 13 second responses). Many times, children said simply that they would hide (12), some told us where (kitchen cupboard, attic behind boxes, under bed, in bedroom closet, in locked bedroom), specified keeping quiet while hiding, or said they would lock the outside doors and then hide. Other anticipated passive responses that were observed in this sample included looking out the window (1), turning on lights (1), ignoring it (1), shutting the blinds (1), turning on the TV (1), staying inside (1) and crying (1). Passive responses we did not specifically anticipate but that were clearly similar to examples we did provide included "I pretend to be a ghost and turn invisible" and "I don't know what I'd do, but I wouldn't get the gun". Given that the doors are already locked according to the scenario, it is notable that children offered this as part or all of one or both of their plans (no children said "make sure the doors are locked, for example). When "lock doors" was given as part of a response, the response was categorized by considering the other portion of the plan (e.g., lock doors and hide, lock doors and stay inside, lock doors and turn on TV). Cases in which "lock doors" was given as the child's entire response were initially uncategorized and were later included as passive based on considerations discussed above.

Total number of passive responses: 34 (15 first responses, 19 second responses)

4. Confrontative Responses include *any response, however fantastical, that indicates that the child would confront the intruder verbally or physically, approach the intruder or talk to him, but without mentioning a gun, e.g., open window and yell "I see you, go away!," let the dog out, go outside to investigate, get a weapon other than gun (e.g., knife, baseball bat, frying pan), go chase him away, beat him up, yell at him and kick him, go tell him to leave me alone.*

Confrontative responses were relatively common, although many were not overtly aggressive. As anticipated, children sometimes reported that they would go outside to investigate (7 first responses and 3 second responses). Children who investigated typically provided lots of detail about what they would do

and why, including specifying the use of flashlights, what kinds of questions they'd ask him (who he is, why he's there), and other details of their plan. One child said he would see if the person were familiar and then would the police if he were not, one said, "I'd go out and see who it is because I probably know him," and another specified asking the person whether he needs help. Although the purpose of these plans was obviously to investigate and obtain information (not to aggressively confront the person in the yard), these plans entail leaving the home to approach and/or interact with an adult whose identity is unknown.

Responses that entail increased proximity were included in the originally proposed categorization scheme as confrontative responses regardless of whether the child's intentions were aggressive. However, we did not anticipate that so many children would have clearly non-aggressive intentions (and friendly expectations) in approaching the intruder. Investigative responses (however bold) may be considered qualitatively dissimilar to the other types of response included in the confrontative category, all of which entail the child asserting verbally that the person must leave (e.g., ask him to leave, yell "go away" at him) or are physically aggressive (e.g., throw ice at him). Therefore, investigative category 4 responses were tallied separately from aggressive category 4 responses. Investigative confrontation responses included: go out, see who it is; shine light to see who it is; talk to him; ask him questions, then call police if unfamiliar; ask why there ; check out who it is, prob know him; go out, see who it is, ask his name. And second responses: go out, look with flashlight to see who it is; find out who he is; find out who it is out there.

Subtotal investigative responses: 10 (7 first responses, 3 second responses).

Aggressive confrontation responses: Two first responses entailed confronting him verbally (ask him to leave, yell "stay away!"), as did one second response (tell him please go away). The remaining plans (3 first responses and 7 second responses) involved physical aggression with or without a weapon other than the gun (confrontative plans that involved the gun are included below in category 6). Aggressive first responses included "hit him" (with fists), "get him with my karate moves," and "attack him" (with battle cry and waving fists). Aggressive second responses included, "attack him before he can attack me, just go out and get him," "attack him with a big stick," "throw big hunks of ice at him," and "give him some

poisoned gum." The remaining 3 aggressive second responses entailed preparing for physical confrontation by obtaining a weapon other than the gun ("get my karate sticks") or by setting traps for the intruder ("set lots of traps," "turn fire on in chimney in case he comes in that way")

Subtotal aggressive responses: 13 (5 first responses, 8 second responses)

Total confrontative responses: 23 (12 first responses, 11 second responses)

6. Gun Responses were originally defined as responses that were *confrontative (see #4), but with explicit mention of any gun (including responses that seem to indicate child already went and got a gun from somewhere), e.g., yell "I have a gun!" (whether bluffing or not), point my gun at him, show him my gun through the window so he'll go away, scare him away with the gun, shoot at him, shoot him. This category also originally included responses that indicate accessing the gun without any stated intent of what to do with it, e.g., get the gun out, go find the gun, grab my gun, get a big shotgun*. However, plans that combined accessing the gun with non-confrontative behaviors (hiding, calling for help) were to be considered a separate category of gun response. However, due to an inadequate number of non-confrontative gun plans (1, get gun and go hide), category 6 was expanded to include all gun responses.

Total gun responses: 9 (6 first responses, 3 second responses)

First responses include: "scare him away with the gun"; shoot him; "prepare for battle" (blockade, traps, gun); get gun (2); get gun and go hide.

Second responses include: get gun; shoot him; "carefully use the gun."

Although classifiable into predetermined response categories, categories were very unevenly represented. Thus, the original categories, although supported, were not all adequately represented in the sample to be useful for group analyses. In particular, defensive gun-related responses (those of primary interest) were offered by only 8 children, which precluded their use

as an outcome variable for regression analyses as proposed (i.e., to predict defensive gun-access responses from high PICGA scores).

Crisis Response Combinations

Children gave two crisis response plans, allowing us to examine combinations of responses. These combinations are summarized below (with the abbreviated label for the child's response), N= 57. Nine participants gave two optimal responses, four children gave an optimal response followed by a non-optimal help-seeking response, and one child gave a non-optimal help-seeking response followed by an optimal response. Five children gave an optimal response followed by a passive response, three children gave a passive response followed by an optimal response, and ten children gave two passive responses. One child gave an optimal response followed by a risky investigative response, and three children gave a risky investigative response followed by an optimal response. One child gave a passive response followed by a risky investigative response, three children gave a risky investigative response followed by a passive response, and one child gave two risky investigative responses. One child gave a verbal confrontation response followed by a passive response, and one child gave two verbal confrontation responses. One child gave an optimal response followed by an aggressive response, two children gave a passive response followed by an aggressive response, and three children gave two aggressive responses. One child gave a passive gun response followed by a passive response, and one child gave a complex passive-defensive gun response followed by a passive response. Two children gave optimal responses followed by defensive gun responses, and two children gave defensive gun responses followed by optimal responses. Finally, one child gave a defensive gun response followed by an aggressive response, and one child gave two defensive gun responses.

Sbj #	cat 1	cat 2	resp 1	resp 2	combination category
20	1	1	Mom	Mom	both optimal
22	1	1	911	Mom	both optimal
42	1	1	Mom	Police	both optimal
49	1	1	Mom	Police	both optimal

51	1	1	911	Police	both optimal
52	1	1	Police	Parents	both optimal
55	1	1	Dad	Police	both optimal
61	1	1	Mom	911	both optimal
74	1	1	911	Pare ts	both optimal
10	1	2	Mom	Leave for help	optimal/otherhelp
32	1	2	Mom	Leave for help	optimal/otherhelp
33	1	2	Mom	Call neighbors	optimal/otherhelp
65	1	2	Police	Leave for help	optimal/otherhelp
41	2	1	Leave for help	Police	otherhelp/optimal
14	1	3	Police	Hife	optimal/passive
16	1	3	Mom + police	Hide	optimal/passive
21	1	3	911	Lock doors	optimal/passive
29	1	3	Mom	Lock doors	optimal/passive
56	1	3	Mom	Lock doors	optimal/passive
24	3	1	Turn on lights	Police	passive/optimal
35	3	1	Hide	Mom	passive/optimal
75	3	1	Close windows	911	passive/optimal
18	3	3	Hide	Pretend to be ghost	passive/passive
26	3	3	Hide	Hide	passive/passive
27	3	3	Hide	Hide	passive/passive
31	3	3	Shut blinds	Lock doors + watch TV	passive/passive
36	3	3	Lock doors + hide	Hide	passive/passive
40	3	3	Hide	Stay quiet	passive/passive
43	3	3	Lock doors	Hide	passive/passive
60	3	3	Lock doors	Hide	passive/passive
64	3	3	Cry	Hide	passive/passive

72	3	3	Lock door, hide	Hide	passive/passive
63	1	4a	Mom	Investigate	optimal/investg
37	4a	1	Investigate	Dad	investg/optimal
48	4a	1	Investigate	Police	investg/optimal
70	4a	1	Investigate	Dad	investg/optimal
25	3	4a	Lock doors	Investigate	passive/investg
11	4a	3	Investigate	Don't know	investg/passive
30	4a	3	Investigate	Look out window	investg/passive
71	4a	3	Investigate	Ignore	investg/passive
44	4a	4a	Investigate	Investigate	investg/investg
17	4b	3	Say "Go away"	Hide	confrnt/passive
62	4b	4b	Say "Leave"	Say "Please leave"	confrnt/confrnt
19	1	4c	Mom	Attack	optimal/aggress
12	3	4c	Hide	Set traps	passive/traps
13	3	4c	Lock door + stay inside	Set trap (fire)	passive/traps
57	4c	4c	Attack	Poison gum attack	aggress/aggress
66	4c	4c	Hit attack	Ice attack	aggress/aggress
73	4c	4c	Attack	Attack	aggress/aggress
53	5	3	Get gun + hide	Hide	passgun/passive
54	5	3	Prep battle w traps, gun	Hide	trapsgun/passive
23	1	6	Police	Get gun	optimal/gun
38	1	6	Police	Use gun	optimal/gun
46	6	1	Shoot him	Mom	gun/optimal
50	6	1	Get gun	Mom	gun/optimal
47	6	4c	Get gun	Get karate sticks	gun/aggress
68	6	6	Scare him w gun	Shoot him	gun/gun

****

Exploratory Gun-access Responses

In addition to two defensive gun-access items, children responded to three exploratory gun-access items: 1. "Which friend is right?" (i.e., the friend who supported exploratory access or the friend who argued against exploratory access), 2. "Would you look at the gun with your friends in real life?", and 3. Would you look at the gun by yourself later, after your friends had gone home?". The table below presents responses for all children making any gun-access response across exploratory and defensive conditions (N=13). Gun responses are listed in bold.

Sub #	Child's sex	Child age in months	Town or rural	Parents keep guns?	Defensive response	which friend is right?	look at gun with friends?	wld you look at gun later w/o friends?
19	male	85	rural	YES	Aggressive	"no gun" kid	**YES /friends**	No look later
54	male	105	rural	no	**Gun**	"no gun" kid	**YES /friends**	**YES /alone**
65	male	100	town	YES	Competent	"no gun" kid	**YES /friends**	**YES /alone**
68	male	60	rural	no	**Gun**	**"GUN" kid**	**YES /friends**	**YES /alone**
22	male	108	rural	YES	Competent	"no gun" kid	no, leave gun	**YES /alone**
50	male	79	town	no	**Gun**	**"GUN" kid**	no, leave gun	**YES /alone**
53	male	72	town	no	**Gun**	"no gun" kid	no, leave gun	**YES /alone**
57	male	66	rural	no	Aggressive	**"GUN" kid**	no, leave gun	**YES /alone**
73	female	78	town	no	Aggressive	"no gun" kid	no, leave gun	**YES /alone**
23	male	92	rural	YES	**Gun**	"no gun" kid	no, leave gun	No look later
38	male	99	town	no	**Gun**	"no gun" kid	no, leave gun	No look later
46	female	73	rural	no	**Gun**	"no gun" kid	no, leave gun	No look later
47	male	87	rural	YES	**Gun**	"no gun" kid	no, leave gun	No look later

A number of observations can be made regarding these results. First, contrary to our predictions, defensive gun access was not endorsed by more children than was exploratory access. We hypothesized that children would be less likely to endorse exploratory gun-access than defensive gun-access, but that we would obtain some variability in responses to the exploratory-access scenario (i.e., some children would still endorse exploratory access). Of 112 defensive responses (2 per child), 9 included gun access (8 children; one child made 2 defensive gun-access responses). Of 169 exploratory responses (3 per child), 15 entailed gun access. However, only 9 participants made any exploratory gun access response. Three children (5% of the sample) said the friend supporting exploratory gun access was right; all three of these children also endorsed one or both of the "would you look at the gun" items (with friends and/or alone later). The other 6 children endorsing exploratory gun access chose the friend who argued against exploratory access as being right; of these 5, 1 said he would look at the gun with his friends but not later by himself, 3 said they would look at the gun later by themselves but not with their friends, and 2 said they would look at the gun both with their friends and later by themselves. Second, gun access responses appear to be related to gender (11/13 children who made any gun-access response were male) but not to gun ownership (5/13 children's parents kept guns). Third, although there was considerable overlap between exploratory and defensive access, including exploratory responses in addition to defensive responses increases the number of gun-access responses available for analysis (from 8 participants to 13). Fourth, children who endorsed exploratory access (N=9) made the following defensive responses: Gun access (4), aggressive without gun (3), and competent (2). No passive or bold defensive responders endorsed exploratory access.

Descriptive statistics for Any Gun Response (defensive or exploratory):

	N	% of sample	Age M	sd	boys	girls	%boys	town	rural	%town	guns	no-guns	%guns
Any Gun	13	22.8%	84.9	15.2	11	2	84.6%	5	8	38.5%	5	8	38.5%
No Gun	44	77.2%	83.7	15.2	24	20	54.5%	25	19	56.8%	18	26	40.9%

****

Other child interview items

In addition to gun-access items discussed above, children responded to a number of interview questions following the gun-scenarios story. After being asked to choose which friend was right, the friend who wanted to look at the gun or the friend who did not want to look at the gun (as discussed above), children were asked "why is (the chosen friend) right?" Of 3 children who had chosen the friend encouraging gun access, one child provided no response, one child said he likes guns, and one child said he is allowed to play with guns. Of the 54 children who had chosen the friend discouraging gun access, 3 made no response, 25 made comments related to the dangerousness of guns, 20 made comments related to not breaking the rules or avoiding getting in trouble, and 6 expressed both reasons (rules and danger) for choosing the safe friend. Children were asked whether the decision to look or not look at the gun with friends was a hard or easy choice, and why. Many children did not seem to understand these questions about their decision-making, and 18 made no response or said they did not know. Of children who said it was hard for them to not look at the gun, 7 said it was hard for them not to look but they don't know why, 2 said it was hard for them to not look because of social reasons (e.g., losing the pro-gun friend), and 3 said it was hard for them to not look because they like guns. Of children who said it was easy for them to not look at the gun with their friends, 14 said they did not know why it was easy for them, 7 said it was easy because of getting in trouble, 6 said it was easy for them to not look because of the danger. Additionally, one child who said he would look at the gun with his friends said this was a hard choice for him but he did not know why. Children were asked whether they would tell their parents that one of their friends wanted to look at the gun. One child made no response, 53 children said they would tell their parents, and 5 children said they would not tell.

Children were asked four additional questions about the defensive gun access/crisis portion of the story. Children were asked, "Who was the person in the yard?" Many (16) said they did not know, couldn't tell who it was, or made no response or an irrelevant response (e.g., describing

their crisis response plans again). However, 24 children said they believed the person in the yard was someone friendly—a parent, neighbor, or other safe person, 15 children said they believed the person in the yard to be someone (or something) threatening—a burglar, monster, assassin, or other bad guy, and 4 children gave neutral responses (a stranger, a soldier, someone whose car broke down). Children were also asked whether it had been hard or easy to know what to do in response to the story crisis. Again, many (16) did not respond or said they did not know, but 19 children said it was hard to know what to do and 22 children said it was easy to know what to do. Children were asked whether they were tempted to get the gun in self-defense and why they were or were not tempted. Of 40 children who responded to this item, 14 said they were tempted and 26 said they were not tempted. Very few children were able to say why they were or were not tempted. Of children who said they were tempted, 7 said this was because they wanted to defend themselves and 1 said he was tempted because he likes guns. Of children who said they were not tempted, 5 referred to the rules, 8 referred to dangerousness, and 5 said they were not tempted because they do not like guns, do not know how to use guns, or were afraid the gun would be too hard to use.

Children were asked several items related to gun beliefs and attitudes. Children were asked, "How fun are guns?" and given several response choices. Of 45 children who responded to this item, 31 chose "not at all fun," 6 chose "a little fun," 5 chose "some fun," 1 chose "very fun," and 2 chose "extremely (very very very) fun." Similarly, when asked, "How scary are guns?," most children (31) chose "very scary" (15) or extremely scary (16), while only 3 chose "pretty scary," 8 chose "a little scary," and 2 chose "not scary at all." Very few children indicated significant interest in guns ("How interesting are guns?"), with 12 children choosing "not at all interesting," 16 choosing "a little interesting," 8 choosing "pretty interesting," 7 choosing "very interesting," and 2 choosing "extremely interesting." Children expressed similarly safe attitudes in response to the question, "How dangerous are guns?" Only one child chose "a little dangerous," 4 children

chose “kind of dangerous,” 12 children chose “very dangerous,” and 28 children chose “extremely dangerous.”

When asked, “Do you know how to shoot a gun?,” 24 children (of 40 responding to this item) said they knew how to shoot. However, fewer children (15) said they want to have a gun of their own (30 said they do not want a gun). Of 45 children who responded to the item “What is the best age for a person to get a gun?,” 33 gave responses indicating adult ages, 11 gave responses indicating children’s ages, and one child said it depends on the gender of the person—girls, being more mature, can have guns at age 12 whereas boys should wait until they are 40.

Appendix D: Proposed regression analyses to predict risky gun-access responding.

I. Proposed regression design:

Prediction of risky gun-access responding from multiple variables: Continuous variables will be tested for normality, and non-normally distributed variables will be converted using square-root or log transformations to distributions that approximate the normal. Variables that cannot be normalized because of their bi- or multi-modal distributions will be converted to dichotomous or multi-categorical variables. Both continuous and categorical predictor variables will be included in regression analyses on the endorsement of risky decision-making in gun-access scenarios. Initially, socio-demographic variables (child's age, gender, and race) will be regressed onto variables indicative of risky responding. Next, child behavior problems or aggression will be allowed to enter the regression equation. Last, variables based on the PICGA (subscale scores) will be added to the regression model. Specific forms of regression analysis employed will vary according to the type of outcome variable used in the regression equation. For continuous outcome variables, multiple linear regression will be used, while for categorical outcome variables, logistic regression (for dichotomous variables) or categorical regression (for tricotomous variables and beyond) will be employed. Standard well-accepted criteria will be adhered to for determination of significance, evaluation of direction and strength of relationships, and interpretations of the model's results.

II. Why the proposed regression analyses wouldn’t work:

As described in Appendix A, limited variability on both predictor and outcome variables necessitated a number of modifications to the proposed predictive analyses. Variables with sufficient variability to be considered for inclusion as predictor variables included age (interval, months), sex (dichotomous, male/female), residence (dichotomous, rural/town), PICGA total score, LS subscale score, VE subscale score, CR subscale score, and parental gun ownership (dichotomous, no guns vs. any guns). Four categorical outcome variables were selected based on the group assignment of children according to their defensive responses (competent vs. not, passive vs. not, bold vs. not, and aggressive vs. not), as well as one outcome variable based on children’s gun-access responses across defensive and exploratory conditions

(any gun access vs. not). Due to very small group sizes, however, only the analysis to predict competent responses could reasonably include multiple predictors (using a rule of thumb of no more than 1 predictor per 7-10 cases).

Further, even for the analysis of competent responses, inclusion of all available predictor variables (3 dichotomous and 4 interval/continuous) would not be advisable given that only 22 competent responses are available to be predicted. Rather, 2-3 predictor variables could be selected for inclusion in the analysis of competent responses. Although this is a conservative estimate (based on the number of cases with a parameterized value of 1 on the outcome variable rather than on the total number of cases in the sample), this is an appropriate strategy for regression models using categorical outcome variables; regressions using continuous outcome variables can be more lenient without sacrificing model integrity).

In order to select appropriate variables to include in the four logistic regression analyses, basic correlations were run to discern whether any of the available predictors were associated with the outcome variables. All outcome variables are dichotomous categorical variables. (Although correlating categorical and continuous variables requires the use of a point-biserial correlation, no special formula is required; the general Pearson product moment correlation coefficient formula reduces to a point-biserial correlation when applied to these variable types. Further, if both variables being correlated are dichotomous, the standard Pearson formula reduces further to that for a phi coefficient.)

Correlations between competent 0-1 variable and potential predictor variables.
Significance values: **p<.01, *p<.05; all others non-significant (p>.05)

N=56	VE subscale score	LS subscale score	CR subscale score	PICGA total score	Child's age in months	Child's sex M= 0	resident town=0	Guns at home 0 = no
competent 0-1	.056	-.303*	-.071	.051	.545**	.038	-.103	.009

Competent 0-1 Means and standard deviations by group

	Not Competent (0) N=34		Competent (1) N=22	
Variable	Mean	sd	Mean	sd
Vicarious Exposure subscale total	9.56	5.71	10.18	5.13
Lack Safety Skills subscale total	**14.74**	**6.03**	**11.32**	**4.02**
Child Receptivity subscale total	15.71	4.62	15.00	5.32
PICGA total	68.03	32.97	71.86	44.12
Child age in months	**77.51**	**13.30**	**94.27**	**11.90**
Child's sex (male = 0)	.37	.49	.41	.50
Residence (town = 0)	.51	.51	.41	.50
Guns at home (No = 0)	.40	.50	.41	.50

Based on these correlations and group means, only two variables could contribute to the prediction of competent scores: older child age and lower LS subscale scores (better safety skills). However, older age and lower LS scores are correlated; when this correlation is controlled for, the correlation between LS and competent scores becomes non-significant (-.156, p =.13). Therefore, only child age was included in a logistic regression analysis to predict competent scores. (Including both variables in a multivariate logistic regression analysis performed by the computer obtains the same result; age enters the analysis first, is significant, and removes too much shared variance for LS to remain significant and enter the model.)

Correlations between passive 0-1 outcome variable and potential predictor variables.

Significance values: **p<.01, *p<.05; all others non-significant (p>.05)

N=56	VE subscale score	LS subscale score	CR subscale score	PICGA total score	Child's age in months	Child's sex M= 0	resident town=0	Guns at home 0 = no
passive 0-1	-.005	.105	.053	-.085	-.330**	-.056	-.059	-.162

Passive 0-1 Means and standard deviations by group

	Not Passive (0) N=44		Passive (1) N=12	
Variable	Mean	sd	Mean	sd
Vicarious Exposure subscale total	9.82	5.06	9.75	6.97
Lack Safety Skills subscale total	13.09	5.38	14.50	6.26
Child Receptivity subscale total	15.30	4.87	15.92	5.05
PICGA total	71.18	37.02	63.50	39.83
Child age in months	**86.53**	**14.40**	**74.42**	**14.37**
Child's sex (male = 0)	.40	.50	.33	.49
Residence (town = 0)	.49	.51	.42	.51
Guns at home (No = 0)	.44	.50	.25	.45

Only one variable was significantly correlated with passive responses and could potentially contribute to the prediction of these responses—younger child age.

Bold responses

Correlations between bold 0-1 outcome variable and potential predictor variables.
Significance values: **p<.01, *p<.05; all others non-significant (p>.05)

N=56	VE subscale score	LS subscale score	CR subscale score	PICGA total score	Child's age in months	Child's sex M= 0	resident town=0	Guns at home 0 = no
bold 0-1	-.173	.161	-.146	.009	-.225*	.252*	-.019	.232*

Bold 0-1 Means and standard deviations by group

	Not Bold (0) N=45		Bold (1) N=11	
Variable	Mean	sd	Mean	sd
Vicarious Exposure subscale total	10.27	5.65	7.91	4.23
Lack Safety Skills subscale total	12.96	5.44	15.18	5.93
Child Receptivity subscale total	15.78	5.00	14.00	4.17
PICGA total	69.38	39.43	70.18	29.22
Child age in months	**85.63**	**15.33**	**77.09**	**12.48**
Child's sex (male = 0)	**.33**	**.47**	**.64**	**.50**
Residence (town = 0)	.48	.51	.45	.52
Guns at home (No = 0)	**.35**	**.48**	**.64**	**.50**

Three variables were significantly correlated with bold responses—female sex, having guns at home, and younger child age. These variables were entered as predictors in a logistic regression analysis of bold responses.

Aggressive/gun responses:

Correlations between aggressive/gun 0-1 outcome variable and potential predictor variables.
Significance values: **p<.01, *p<.05; all others non-significant (p>.05)

N=56	VE subscale score	LS subscale score	CR subscale score	PICGA total score	Child's age in months	Child's sex M= 0	resident town=0	Guns at home 0 = no
agg/gun 0-1	.109	.104	.180	.017	-.103	-.233*	.200	-.074

Aggressive/gun 0-1 Means and standard deviations by group

	Not Agg/gun (0) N=45		Aggressive/gun (1) N=11	
Variable	Mean	sd	Mean	sd
Vicarious Exposure subscale total	9.51	5.45	11.00	5.57
Lack Safety Skills subscale total	13.11	5.36	14.55	6.44
Child Receptivity subscale total	15.00	4.93	17.18	4.38
PICGA total	69.22	39.15	70.82	30.81
Child age in months	84.78	15.61	81.00	13.22
Child's sex (male = 0)	**.44**	**.50**	**.17**	**.39**
Residence (town = 0)	.42	.50	.67	.49
Guns at home (No = 0)	.42	.50	.33	.49

Only one variable was significantly correlated with aggressive/gun responses—male sex.

<u>All gun responses (exploratory + defensive/crisis)—</u>

Similar analyses were performed to predict children's gun responses (using as the outcome variable any gun-access response across exploratory and defensive conditions). Correlations and means (shown below) indicate that gun-access responses were significantly related to male sex and higher Child Receptivity subscale scores.

Correlations between aggressive/gun 0-1 outcome variable and potential predictor variables.
Significance values: **p<.01, *p<.05; all others non-significant (p>.05)

	VE subscale score	LS subscale score	CR subscale score	PICGA total score	ECBI items T-score	Child's age in months	Guns at home = no	Child's sex M= 0	resident town=0
N = 57									
gun access 0-1	.131	.087	.203*	.151	.032	.039	.001	-.280*	.157

Gun Access (exploratory and/or defensive/crisis) 0-1 Means and standard deviations by group

	No gun access (0) N=44		Any gun access (1) N=13	
Variable	Mean	sd	Mean	sd
Vicarious Exposure subscale total	9.43	5.06	11.17	6.56
Lack Safety Skills subscale total	13.00	5.32	14.17	6.19
Child Receptivity subscale total	**14.55**	**5.09**	**17.08**	**4.62**
PICGA total	65.04	35.77	78.92	42.30
ECBI items T score	51.68	7.07	52.23	7.87
Child age in months	83.49	15.39	84.92	15.24
Child's sex (male = 0)	**.49**	**.51**	**.15**	**.38**
Residence (town = 0)	.51	.51	.62	.51
Guns at home (No = 0)	.38	.49	.38	.51

Unfortunately for our purposes, CR subscale scores and sex are more strongly correlated with each other (-.565, sig. p<.01) than either is with gun-access responses. Given these relationships, to include both predictors in the regression model would result in neither making a significant contribution. Therefore, child's sex was selected as the variable to include (based on better variability in the sample and a larger partial correlation with gun-access responses when controlling for the other intercorrelated variable, CR subscale scores). Logistic regression was performed specifying child's sex as the (dichotomous categorical) predictor variable and any gun-access response as the dichotomous categorical outcome (dependent) variable. Parameterization included internal variable encoding identical to the database variable "dummy" coding for the dependent variable (0=no gun response, 1=any gun response) but opposite the database variable "dummy" coding for the categorical predictor variable (parameterized in the regression analysis as 0=female, 1=male). Without including any predictor variables (i.e., by counting all cases as "no gun response"), 77.2 cases were categorized correctly (this matches the observed percentage of no gun responses in the sample). Despite significant omnibus chi-square tests of model coefficients (shown below), the predictor variable (child's sex) failed to reach significance in the model and did not improve the percentage of cases correctly assigned (which remained at 77.2).

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	4.232	1	.040
	Block	4.232	1	.040
	Model	4.232	1	.040

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1	Male sex (1)	1.522	.826	3.396	1	.065	4.583
	Constant	-2.303	.742	9.640	1	.002	.100

Variable(s) entered on step 1: Child's sex (01).

TODAY'S DATE: _____ Participant #: _____

Parent Information Form

Please answer all questions. If you have any questions about this form, please ask.

1. What is your relationship to the child participating in this study?
   _____ mother
   _____ father
   _____ step-mother
   _____ step-father
   _____ other: (write in your relationship to the child) _____

2. Child's date of birth: _____ _____ _____
   day month year

3. Child's sex: _____ boy _____ girl

4. Child's race: (you may check more than one)
   _____ White or Caucasian
   _____ African-American or Black
   _____ Hispanic or Latino
   _____ Asian or Pacific Islander
   _____ Native American or American Indian
   _____ Other

5. Do you live with this child
   _____ full time
   _____ part time
   _____ other (please explain: _____)

6. What grade in school does this child attend?
   _____ day care, nursery school, or pre-school
   _____ pre-K
   _____ Kindergarten
   _____ first grade
   _____ second grade
   _____ third grade

7. Where does this child go to school?
   _____ public school
   _____ private or church school
   _____ home-schooled
   _____ other (please explain): _____

8. Where does this child live?
   City or Town: _____

   County (if rural residence): _____

9. Type of residence:
   _____ apartment
   _____ duplex or townhouse
   _____ trailer or mobile home
   _____ house

10. How long at this residence? _____ years _____ months

CONTINUE ------->>>>

11. Number of children in this household: _____

12. Number of adults in this household: _____

13. Your marital status:
- _____ married
- _____ separated or divorced
- _____ widowed
- _____ single (never married)

14. Mother's occupation or type of work:
- _____ aide, medical assistant, daycare worker, food service employee, or technician
- _____ secretary, administrative assistant, clerk, plumber, electrician, or contractor
- _____ administrator, manager, supervisor, educator, or nurse
- _____ doctor, lawyer, engineer, scientist, CEO, VP, architect, or other professional
- _____ artist, writer, musician, dancer, photographer, performer, or craftsman
- _____ self-employed
- _____ laborer, custodian, farm worker, or military
- _____ homemaker, volunteer, do not work outside home, or no occupation
- _____ unemployed
- _____ other: _____

15. Father's occupation or type of work:
- _____ aide, medical assistant, daycare worker, food service employee, or technician
- _____ secretary, administrative assistant, clerk, plumber, electrician, or contractor
- _____ administrator, manager, supervisor, educator, or nurse
- _____ doctor, lawyer, engineer, scientist, CEO, VP, architect, or other professional
- _____ artist, writer, musician, dancer, photographer, performer, or craftsman
- _____ self-employed
- _____ laborer, custodian, farm worker, or military
- _____ homemaker, volunteer, do not work outside home, or no occupation
- _____ unemployed
- _____ other: _____

16. Mother's education (please indicate the highest level completed):
- _____ did not finish high school/less than high school education
- _____ high school grad or GED
- _____ some college or training after high school
- _____ college grad
- _____ graduate school or advanced degree

17. _____ check here if mother is currently a student

18. Father's education (please indicate the highest level completed):
- _____ did not finish high school/less than high school education
- _____ high school grad or GED
- _____ some college or training after high school
- _____ college grad
- _____ graduate school or advanced degree

19. _____ check here if father is currently a student

CONTINUE ------->>>>

20. Mother's date of birth: _____ _____ _____
day month year

21. Estimated annual household income:
_____ less than $10,000
_____ between $10,000 and $30,000
_____ between $30,000 and $50,000
_____ between $50,000 and $70,000
_____ between $70,000 and $90,000
_____ more than $90,000

22. Are you currently receiving any form of government assistance (e.g., disability, social security, food stamps, Medicare)?
_____ YES
_____ NO

23. Does your family participate in the CHIP program (Child Health Investment Partnership)?
_____ YES
_____ NO

**********END**********
(CONTINUE TO NEXT FORM)

Today's Date: _____ Participant Number: _____

Inventory of Family Firearm Behavior (FFB)

If you would like this survey to be read aloud to you for any reason, please ask and we will be happy to read it to you. Please answer every question. If you are not sure how to answer a question, choose your best answer and, if you want to, write a note beside the question. All notes will be read. In this survey, the term "your child" means the child who is participating with you in our study. You may ask us any questions at any time.

This survey asks about your opinions and behaviors related to firearms (guns). It also asks some other questions about your child. We recognize and respect the diversity of opinion about guns in our country, and we hope you will answer honestly and freely. There are no right or wrong answers to this survey—these questions do not *judge* opinions and behaviors, but only ask about them. Thank you for helping us!

1. How many handguns (pistols, revolvers, etc.) are in your home?
__ 0 __ 1 __ 2 __ 3 or 4 __ 5 or more

2. Why are handgun(s) in your home? (check all that apply)
__ n/a no handguns at home.
__ for protection from criminals/intruders.
__ for hunting, target shooting, or other shooting sports.
__ for collecting.
__ because guns are a family tradition.
__ for work or employment (e.g., for sheriff or police work).
__ because it is our constitutional right or patriotic duty to keep guns.

3. How often is any handgun in a quickly accessible place in your home (e.g., by your bed)?
___ n/a no handgun at home
___ never
___ rarely
___ sometimes
___ often
___ always or almost always

4. How often is any loaded handgun in your home?
___ n/a no handgun at home
___ never
___ rarely
___ sometimes
___ often
___ always or almost always

5. Does your child know handgun(s) are in your home?
_____ n/a no handgun at home
_____ Yes
_____ No
_____ I don't know.

6. Does your child know where any handgun(s) are in your home?
_____ n/a no handgun at home
_____ Yes
_____ No
_____ I don't know.

7. Does your child know why handgun(s) are in your home?
_____ n/a no handgun at home
_____ Yes
_____ No
_____ I don't know.

8. How many long guns (rifles, shotguns) are in your home?
__ 0 __ 1 __ 2 __ 3 or 4 __ 5 or more

9. Why are long gun(s) in your home? (check all that apply)
__ n/a no long guns at home.
__ for protection from criminals/intruders.
__ for hunting, target shooting, or other shooting sports.
__ for collecting.
__ because guns are a family tradition.
__ for work or employment (e.g., for sheriff or police work).
__ because it is our constitutional right or patriotic duty to keep guns.

10. How often is any long gun in an easily accessible place in your home (e.g., by the back door)?
___ n/a no long guns at home
___ never
___ rarely
___ sometimes
___ often
___ always or almost always

11. How often is any loaded long gun in your home?
___ n/a no long guns at home
___ never
___ rarely
___ sometimes
___ often
___ always or almost always

12. Does your child know that long gun(s) are in your home?
_____ n/a no long guns at home
_____ Yes
_____ No
_____ I don't know

13. Does your child know where any long gun(s) are in your home?
_____ n/a no long guns at home
_____ Yes
_____ No
_____ I don't know.

14. Does your child know why long gun(s) are in your home?
_____ n/a no long guns at home
_____ Yes
_____ No
_____ I don't know.

15. How many non-powder guns are in your home? Non-powder guns are bb.-guns, air rifles, paint-ball guns, etc.—any low-velocity guns that shoot small, solid or semi-solid projectiles without gun powder. (Do not count toy guns like water pistols or molded plastic toys that do not shoot projectiles.)
__ 0 __ 1 __ 2 __ 3 or 4 __ 5 or more

16. How many toy guns are in your home? Toy guns include water-shooters and other toys that look like guns but only shoot water or very low-velocity soft objects (e.g., Nerf balls, ping-pong balls), or do not shoot at all (e.g., molded plastic toys shaped like guns). (Do not count air rifles, bbguns, and other low-velocity guns that shoot small, solid projectiles.)
__ 0 __ 1 __ 2 __ 3 or 4 __ 5 or more

17. Do you (or another adult in your household) keep guns in a location other than at home?
_____ No
_____ Yes, both long gun(s) and handgun(s)
_____ Yes, long gun(s) only
_____ Yes, handgun(s) only

18. How often do adults handle handguns or long guns in front of your child? (at home or elsewhere, for cleaning, shooting, showing, teaching, or any other purpose)
___ never
___ very rarely
___ rarely
___ sometimes
___ often
___ very often

19. How often does your child handle handguns or long guns under close adult supervision? (at home or elsewhere, for cleaning, shooting, learning, or any other purpose)

___ never
___ very rarely
___ rarely
___ sometimes
___ often
___ very often

20. How often does your child go with you (or another close adult) to gun shows, gun shops, or other places to look at or buy guns?

___ never
___ very rarely
___ rarely
___ sometimes
___ often
___ very often

21. How often does your child go with you (or another close adult) to a shooting range, on hunting trips, or to other places where people shoot guns?

___ never
___ very rarely
___ rarely
___ sometimes
___ often
___ very often

22. How often does your child play at or stay over at the homes of friends or family members who keep guns at home?

___ never
___ very rarely
___ rarely
___ sometimes
___ often
___ very often
___ I don't know

23. Are you (or another adult in your household) a member of any gun-related associations, clubs, or organizations (formal or informal)?

_____ Yes
_____ No
_____ I don't know

24. Have you (or another adult in your household) ever taken a class or training course on safe shooting or gun safety?

_____ Yes
_____ No
_____ I don't know

25. In your opinion, how useful is a handgun for personal and home protection if it's kept loaded and in a quickly accessible place (e.g., bedside table)? (Circle your choice on a scale of 1 to 10.)

1	2	3	4	5	6	7	8	9	10
not at all useful				somewhat useful					extremely useful

26. In your opinion, how useful is a handgun for personal and home protection if it's kept unloaded in a less accessible place (e.g., in a locked box in the closet)? (Circle your choice on a scale of 1 to 10.)

1	2	3	4	5	6	7	8	9	10
not at all useful				somewhat useful					extremely useful

27. In your opinion, how dangerous are guns? (Circle your choice on a scale of 1 to 10.)

1	2	3	4	5	6	7	8	9	10
not at all				somewhat					extremely

28. In your opinion, how fun are guns? (Circle your choice on a scale of 1 to 10.)

1	2	3	4	5	6	7	8	9	10
not at all				somewhat					extremely

29. In your opinion, to what extent is American society a “gun culture”? (Circle your choice on a scale of 1 to 10.)

1	2	3	4	5	6	7	8	9	10
not at all				somewhat					extremely

30. In your opinion, how important is it for Americans to protect our right to own guns? (Circle your choice on a scale of 1 to 10.)

1	2	3	4	5	6	7	8	9	10
not at all				somewhat					extremely

31. Have you (or another adult in your household) ever talked about gun safety with your child's doctor or with any other health professional (e.g., nurse, social worker)?

_____ Yes
_____ No
_____ I don't know

32. How old were you when you first started learning how to shoot? (If you don't remember, please make your best guess.)

I was _____ years old. (Write in age.)

____ check here if this question doesn't apply to you because you never learned to shoot.

33. What is the best age to start teaching a child how to shoot? (Write in age or other response here: _____.)

34. What is the best age to give a child his/her first gun? (Write in age or other response here: _____.)

35. How often do you talk to your child about gun safety?

___ never
___ rarely
___ sometimes
___ often

36. Have you ever said any of the following to your child? (check all that apply):

___ Guns are not toys.
___ Stay away from guns.
___ Guns are dangerous.
___ Don't touch guns.
___ If you find a gun, tell a grown-up right away.

37. Have you ever said any of the following to your child? (check all that apply):

___ Guns are for adults (grown-ups).
___ Guns are for hunting animals.
___ Guns are for shooting at targets.
___ Guns are for protecting us from bad people (criminals, intruders).
___ Guns are for keeping us (the family) safe.

38. How much interest in guns does your child show?

__ no interest in guns
__ a little interest in guns
__ some interest in guns
__ quite a bit of interest in guns
__ very strong interest in guns

39. How afraid of guns is your child?

__ not afraid of guns
__ a little afraid of guns
__ somewhat afraid of guns
__ quite afraid of guns
__ very afraid of guns

40. How often do you talk to your child about how to act in an emergency?
___ never
___ rarely
___ sometimes
___ often

41. What kinds of dangerous situations have you talked about with your child? (Check all that apply.)
___ what to do if your home is on fire
___ what to do if s/he gets hurt when you aren't with him/her
___ what to do if an intruder breaks into your home
___ what to do if a stranger approaches him/her or offers him/her a ride
___ what to do if someone threatens him/her
___ what to do if s/he sees a crime happening or sees someone who needs help
___ what to do if s/he is home alone and a stranger comes to the door
___ what to do if someone offers him/her alcohol, cigarettes, or illegal drugs
___ what to do if s/he gets lost
___ what to do if a friend tries to get him/her to do something dangerous
___ what to do if another child tries to pick a fight with him/her

42. Does your child know how to dial "911"?
___ Yes
___ No
___ I don't know

43. Does your child know his/her full name, address, and telephone number?
___ Yes
___ No
___ I don't know

44. Have you practiced "911" or other emergency skills with your child (e.g., home fire drill)?
___ Yes
___ No
___ I don't know

45. How often is your child difficult to manage, stubborn, or uncooperative?
___ never
___ very rarely
___ rarely
___ sometimes
___ often
___ very often

46. How often is your child angry, aggressive, hot-tempered, or throw tantrums?
___ never
___ very rarely
___ rarely
___ sometimes
___ often
___ very often

47. How often is your child impulsive (makes decisions too quickly or acts without thinking it through first)?
___ never
___ very rarely
___ rarely
___ sometimes
___ often
___ very often

48. How often does your child take risks, act wild, or do dare-devil things?
___ never
___ very rarely
___ rarely
___ sometimes
___ often
___ very often

49. Does your child have older siblings (brothers or sisters) at home?
___ yes
___ no

50. How often does your child watch any TV?
___ one day a week or less often
___ 2 or 3 days a week
___ 4 or 5 days a week
___ almost every day
___ every day

51. About how many hours of TV does your child <u>usually</u> watch <u>on school days</u>?
___ less than one hour
___ 1 to 2 hours
___ 2 to 3 hours
___ 3 to 4 hours
___ 4 to 5 hours
___ 5 to 6 hours
___ more than 6 hours

52. How often does your child watch TV shows that have guns or shooting?
___ never
___ very rarely
___ rarely
___ sometimes
___ often
___ very often

53. How often does your child play video or computer games (e.g., Nintendo)?
___ one day a week or less often
___ 2 or 3 days a week
___ 4 or 5 days a week
___ almost every day
___ every day

54. For about how many hours does your child usually play video games on school days?
___ less than one hour
___ 1 to 2 hours
___ 2 to 3 hours
___ 3 to 4 hours
___ 4 to 5 hours
___ 5 to 6 hours
___ more than 6 hours

55. How often does your child play video games that have guns or shooting?
___ never
___ very rarely
___ rarely
___ sometimes
___ often
___ very often

56. How often does your child play with toy guns or play imaginary shooting games (e.g., pretending to be a police officer catching a bad guy or a soldier fighting the enemy)?
___ never
___ very rarely
___ rarely
___ sometimes
___ often
___ very often

57. Does your child prefer violent TV shows and games?
___ No
___ Yes
___ I don't know

Thank you for completing this survey!

I'm going to read you a story. You are going to listen. I want you to listen carefully to the whole story, and then we can talk when I'm done reading. Are you ready?…OK. I want you to imagine that this is a story about you and your friends. Imagine what it would be like to be you in this story.

One day, you and your friends, Ben and Carl, are playing outside when you hear your Mom calling to you to come in. You and Ben and Carl go inside.

Your Mom is standing by the front door, putting on her coat. She turns to you and says,

"OK. I'm going out like we talked about. The phone number where I'll be is on the fridge. I'll be back late, so go to bed on time. And remember the rules. I'm trusting you to take care of yourself tonight. You KNOW you're not allowed near the gun in my bedroom. I mean it! OK, I think that's it. Be GOOD. I love you."

****And with that, Mom picks up her keys and walks out of the house, locking the front door behind her. You and your friends are alone.**

Carl says, "Your Mom always tells you to stay away from that gun. Let's go look at it. I want to see it."

Ben says, "That's a bad idea. We could get shot or something."

Carl says, "Come ON. Nothing's gonna happen. We'll just LOOK at it--it'll be fun."

Ben says, "No WAY! We're not allowed! If your Mom finds out, we'll be in BIG trouble!"

Carl says, "Your Mom is NOT gonna find out. Come on, whaddya say?"**

Just then, the phone rings. Ben and Carl have to go home. It's too dark to play outside, so you go back inside, making sure to lock the door behind you. You watch some TV. Then you go to bed.

Lying in bed, you hear that the TV is still on in the other room--you forgot to turn it off when you went to bed! So you get up to go turn it off. When you switch off the TV, suddenly the house is very dark and very quiet.

Just then, you hear a strange noise outside. What was that??!! It sounded like somebody sneezed!

You walk over to the window and look outside. It is really dark out there—it's hard to see anything…Then you see a person in the yard! Someone big, wearing dark clothes. Suddenly, you feel really scared!

'There's someone in the backyard, and he's getting closer! I've got to DO something!!' *(2-second pause)* WHAT WOULD YOU DO??

I'm going to read you a story. You are going to listen. I want you to listen carefully to the whole story, and then we can talk when I'm done reading. Are you ready?…OK. I want you to imagine that this is a story about you and your friends. Imagine what it would be like to be you in this story.

One day, you and your friends, Jen and Sue, are playing outside when you hear your Dad calling to you to come in. You and Jen and Sue go inside.

Your Dad is standing by the front door, putting on his coat. He turns to you and says,

"OK. I'm going out like we talked about. The phone number where I'll be is on the fridge. I'll be back late, so go to bed on time. And remember the rules. I'm trusting you to take care of yourself tonight. You KNOW you're not allowed near the gun in my bedroom. I mean it! OK, I think that's it. Be GOOD. I love you."

****And with that, Dad picks up his keys and walks out of the house, locking the front door behind him. You and your friends are alone.**

Sue says, "Your Dad always tells you to stay away from that gun. Let's go look at it. I want to see it."

Jen says, "That's a bad idea. We could get shot or something."

Sue says, "Come ON. Nothing's gonna happen. We'll just LOOK at it--it'll be fun."

Jen says, "No WAY! We're not allowed! If your Dad finds out, we'll be in BIG trouble!"

Sue says, "Your Dad is NOT gonna find out. Come on, whaddya say?"**

Just then, the phone rings. Jen and Sue have to go home. It's too dark to play outside, so you go back inside, making sure to lock the door behind you. You watch some TV. Then you go to bed.

Lying in bed, you hear that the TV is still on in the other room--you forgot to turn it off when you went to bed! So you get up to go turn it off. When you switch off the TV, suddenly the house is very dark and very quiet…

Just then, you hear a strange noise outside. What was that??!! It sounded like somebody sneezed!

You walk over to the window and look outside. It is really dark out there—it's hard to see anything…Then you see a person in the yard! Someone big, wearing dark clothes. Suddenly, you feel really scared!

'There's someone in the yard, and he's getting closer! I've got to DO something!!' *(2-second pause)* WHAT WOULD YOU DO??

If child talks during story, stop reading. Make a brief reply to the child's statement, then give child reminder (using a gentle tone of voice):
No more talking until the end of the story. Just listen. We'll talk when the story is over.
Continue reading story.

- **WHAT WOULD YOU DO??**

If child is already responding to the prompt, let child continue talking. If the child has not responded after about 10 seconds, prompt him/her:
"WOW. What would you do?"
When child has finished responding,
"What else could you do instead?"
When child has finished responding,
"Which would be better, ___(*first strategy*)__ or ____(*second strategy*)___ ?"
When child has finished responding,
"Why is (chosen strategy) **the best thing to do?"**

"Now, I'm going to read a little part of the story again. You listen, and then I'll ask you a couple more questions. OK?"
Wait for child to orient to listening task, then read bolded middle portion of story text. When finished, pause for 2 seconds.
"OK. So who's right, Ben (Jen) or Carl (Sue)?"
Listen to child's response. Depending on child's response, say:
"Why is (chosen friend) right?" or **"Why are they both right?"**
Wait for child to finish responding, then say,
"So, would <u>you</u> look at the gun with your friends in real life?"
Wait for child to finish responding, then say,
"Would you look at the gun by yourself later, after your friends had gone home?"
Wait for child to finish responding, then say,
"Would you tell your Mom (Dad) that one of your friends wanted to look at the gun?"
Wait for child to finish responding, then say,

"So you said that you (would / would NOT) go look at the gun with your friends. Would that be a hard choice or an easy choice for you?"
Wait for child to finish responding. If child gives only yes/no response, say,
"Why would that be a hard / easy choice?"

"And remember before, when we talked about the person standing in the backyard?… who do you think that was?"

Wait for child to finish responding, then say,

"You said that when you saw the person in the backyard, you would _____*first choice strategy*_____. Would that be an easy choice or a hard choice?"

Wait for child to finish responding, then say,

"Would you be tempted to go and get the gun?"

Wait for child to finish responding, then say,

"Really? Why (or why not)?"

Wait for child to finish responding, then say,

"How much fun are guns?" not at all / a little / somewhat / very / extremely

Wait for child to finish responding, then say,

"How scary are guns?" not at all / a little / somewhat / very / extremely

Wait for child to finish responding, then say,

"How interesting are guns?" not at all / a little / somewhat / very / extremely

Wait for child to finish responding, then say,

"How dangerous are guns?" not at all / a little / somewhat / very / extremely

Wait for child to finish responding, then say,

"Do you know how to shoot a gun?"

Wait for child to finish responding, then say,

"Do you want to have your own gun?"

Wait for child to finish responding, then say,

"How old do you think you should have to be before you get your own gun?"

Wait for child to finish responding, then say,

"OK, that's it! You did a really great job of listening to the story and answering my questions!! Do you have any questions for me right now?"

If "yes" listen to and answer child's questions before proceeding.

"OK. Now we're going to do something different. Do you want to take a break or get a drink of water before we do the next part?"

(continue to Children's Inventory of Anger protocol)

VIRGINIA POLYTECHNIC INSTITUTE & STATE UNIVERSITY
Informed Consent for Research Participants--Parent

TITLE: Firearms-related beliefs and behaviors in young children and their parents.
INVESTIGATORS: Kirsten Bradbury, M.S., and Jack W. Finney, Ph.D.

I. PURPOSE OF STUDY:

You and your child are invited to participate in a study by researchers at Virginia Tech examining beliefs and behaviors related to firearms (guns), and particularly influences on children's decision-making in situations in which guns are available. We hope that the results of this research will help us better understand how parents handle the topic of guns and gun-related issues with their children. The purpose of this "Informed Consent Form" is to give you information you need in order to decide if you wish to be in the study, and to inform you about your rights as a research participant. It is important to us that you understand this information. Participation in this research is your choice, and you may refuse to participate. Please ask questions at any time and we will answer them. You will be given a signed copy of this form.

II. PROCEDURE:

You will be asked to complete several surveys that assess the following: your child's knowledge, interests, and behavior related to guns, safety, emergency responding, and other related topics; your own beliefs and behaviors related to guns and gun safety for children; and descriptive sociodemographic information about you and your family. Should you desire it, help will be given to you with reading these questionnaires. While you are filling out the surveys, your child will listen to a brief story involving a handgun being available to a child under two different circumstances (when the child is exploring/playing and when the child is faced with a potential threat to his/her personal safety). Your child will answer questions about how s/he would handle the situations described in the story. Your child will also answer questions about his/her feelings, interests and activities. Parent and child participation should not take longer than 60 minutes (one hour) total.

III. RISKS:

Participation in this study involves no apparent risks to you or your child. If at any time you feel uncomfortable participating, please notify the experimenter immediately.

IV. BENEFITS:

Participation in this study involves no treatment or other intervention that could benefit the individual participants. However, there may be societal benefits: your participation may help us to identify important influences on children's decision-making in risky situations involving guns. Identification of these influences is necessary for developing effective programs to assist children in making safe decisions in response to real-life dangers. Thanks to your participation, we may improve scientific understanding of how to prevent young children from becoming involved in dangerous situations with firearms.

V. ANONYMITY and CONFIDENTIALITY

All information obtained in this study will be kept strictly confidential. No one but the researchers will have access to your results. Your results will never be released to anyone without your prior written consent. The information you provide will have your name removed and only a subject number will identify your responses during data analyses and write-up of the results. Children’s responses, which will be audiotaped, will be similarly confidential. Tapes will be labelled with a subject number rather than the child’s name, and the tapes will be stored in a secure, private area with the rest of the study data. The tapes and other original data will be stored for a minimum of 5 years after completion of the project, after which time they will be destroyed. Taped data, like all other data gathered for this study, will never be released to anyone not associated with the research project without the prior written consent of the participant and his/her parent. The only situation in which confidentiality is not ensured is when required by law. This is the case only if a parent or child

threatens to intentionally harm him/herself or someone else. Your child's answers about what s/he would do in hypothetical (imagined) situations or situations presented in stories, even if these responses include intentional harm to persons, would not require any breach of confidentiality. After participation is over, we encourage you to discuss with your child his/her experience participating in the study.

VI. COMPENSATION:

Your participation is voluntary. Your child will be given a small toy at the end of today's session, and you will be given a $20 gift certificate to Wal-Mart. If you decline to participate in the study, or if you stop participation without completing the full protocol, your child will still receive a toy and you will still receive the gift certificate. When the certificate is given to you, you will need to sign a receipt saying that you received the certificate.

VII. FREEDOM TO WITHDRAW:

You are free to withdraw from (stop) participation in this study at any time without penalty. You reserve this right when you consent to participate. You may choose to not answer any question you do not wish to answer.

VIII. APPROVAL OF RESEARCH:

This research has been approved, as required, by the Human Subjects Committee (HSC) of the Dept. of Psychology, and by the Institutional Review Board for Research Involving Human Subjects (IRB) of Virginia Polytechnic Institute and State University.

IX. SUBJECT'S RESPONSIBILITIES:

Participants have the following responsibilities: 1. Notify the researchers if you are uncomfortable or wish to stop participation at any time; 2. Answer honestly any questions you choose to answer.

X. SUBJECT PERMISSION:

By signing below, you are agreeing to the following statement:

I, _____, have read and understand the Informed Consent and conditions of this project. I have had an opportunity to ask questions, and my questions have been answered. I understand that participation is voluntary, and that the only compensation I will receive is as described in this consent form. I understand that I may discontinue participation at any time without prejudice or penalty, and that I will still be compensated if I refuse to participate or stop participation before completion. I understand that should I have any questions regarding this research or its conduct, I should contact any of the persons named below:

Primary Investigator:	Kirsten Bradbury, M.S.	(540) 231-8504
Faculty Advisor:	Jack W. Finney, Ph.D.	(540) 231-6670
Chair, IRB:	David Moore, DVM	(540) 231-4991

I hereby acknowledge the above and give my voluntary consent for my participation in this study.

Signature of Parent/Guardian: _____

Printed Name of Parent/Guardian: _____

Signature of Administrator: _____

Printed Name of Administrator: _____

Date: _____

parent informed consent page 2 of 2

VIRGINIA POLYTECHNIC INSTITUTE & STATE UNIVERSITY

Informed Consent for Research Participants—Parent Permission for Child Participation

TITLE: Firearms-related beliefs and behaviors in young children and their parents.

INVESTIGATORS: Kirsten Bradbury, M.S., and Jack W. Finney, Ph.D.

I. PURPOSE OF STUDY:

You and your child are invited to participate in a study by researchers at Virginia Tech examining beliefs and behaviors related to firearms (guns), and particularly influences on children's decision-making in situations in which guns are available. We hope that the results of this research will help us better understand how parents handle the topic of guns and gun-related issues with their children. The purpose of this "Informed Consent Form" is to give you information you need in order to decide if you wish for your child to be in the study, and to inform you about your child's rights as a research participant. It is important to us that you understand this information. Your child's participation in this research is your choice, and you may refuse to have him/her participate. Please ask questions at any time and we will answer them. You will be given a signed copy of this form.

II. PROCEDURE:

You will be asked to complete several surveys that assess the following: your child's knowledge, interests, and behavior related to guns, safety, emergency responding, and other related topics; your own beliefs and behaviors related to guns and gun safety for children; and descriptive sociodemographic information about you and your family. Should you desire it, help will be given to you with reading these questionnaires. While you are filling out the surveys, your child will listen to a brief story involving a handgun being available to a child under two different circumstances (when the child is exploring/playing and when the child is faced with a potential threat to his/her personal safety). Your child will answer questions about how s/he would handle the situations described in the story. Your child will also answer questions about his/her feelings, interests and activities. Parent and child participation should not take longer than 60 minutes (one hour) total.

III. RISKS:

Participation in this study involves no apparent risks to you or your child. If at any time you or your child feels uncomfortable participating, the experimenter should be notified immediately.

IV. BENEFITS:

Participation in this study involves no treatment or other intervention that could benefit the individual participants. However, there may be societal benefits: your participation may help us to identify important influences on children's decision-making in risky situations involving guns. Identification of these influences is necessary for developing effective programs to assist children in making safe decisions in response to real-life dangers. Thanks to your participation, we may improve scientific understanding of how to prevent young children from becoming involved in dangerous situations with firearms.

V. ANONYMITY and CONFIDENTIALITY

All information obtained in this study will be kept strictly confidential. No one but the researchers will have access to your results. Your results will never be released to anyone without your prior written consent. The information you provide will have your name removed and only a subject number will identify your responses during data analyses and write-up of the results. Children's responses, which will be audiotaped, will be similarly confidential. Tapes will be labelled with a subject number rather than the child's name, and the tapes will be stored in a secure, private area with the rest of the study data. The tapes and other original data will be stored for a minimum of 5 years after completion of the project, after which time they will be destroyed. Taped data, like all other data gathered for this study, will never be released to anyone not associated with the research project without the prior written consent of the participant and his/her parent. The only situation in which confidentiality is not ensured is when required by law. This is the case only if a parent or child

threatens to intentionally harm him/herself or someone else. Your child's answers about what s/he would do in hypothetical (imagined) situations or situations presented in stories, even if these responses include intentional harm to persons, would not require any breach of confidentiality. After participation is over, we encourage you to discuss with your child his/her experience participating in the study.

VI. COMPENSATION:

Your participation is voluntary. Your child will be given a small toy at the end of today's session, and you will be given a $20 gift certificate to Wal-Mart. If you decline to participate in the study, or if you stop participation without completing the full protocol, your child will still receive a toy and you will still receive the gift certificate. When the certificate is given to you, you will need to sign a receipt saying that you received the certificate.

VII. FREEDOM TO WITHDRAW:

You are free to withdraw your child from participation in this study at any time without penalty. You reserve this right when you consent to your child's participation. Your child may choose to not answer any question s/he does not wish to answer.

VIII. APPROVAL OF RESEARCH:

This research has been approved, as required, by the Human Subjects Committee (HSC) of the Dept. of Psychology, and by the Institutional Review Board for Research Involving Human Subjects (IRB) of Virginia Polytechnic Institute and State University.

IX. SUBJECT'S RESPONSIBILITIES:

Participants have the following responsibilities: 1. Notify the researchers if you are uncomfortable or wish to stop participation at any time; 2. Answer honestly any questions you choose to answer.

X. SUBJECT PERMISSION:

By signing below, you are agreeing to the following statement:

I, _____, have read and understand the Informed Consent and conditions of this project. I have had an opportunity to ask questions, and my questions have been answered. I understand that my child's participation is voluntary, and that the only compensation we will receive is as described in this consent form. I understand that I may discontinue my child's participation at any time without prejudice or penalty, and that we will still be compensated if I refuse to allow my child to participate or I stop my child's participation before completion. I understand that should my child have any questions regarding this research or its conduct, I should contact any of the persons named below:

Primary Investigator: Kirsten Bradbury, M.S. (540) 231-8504
Faculty Advisor: Jack W. Finney, Ph.D. (540) 231-6670
Chair, IRB: David Moore, DVM (540) 231-4991

I hereby acknowledge the above and give my voluntary consent for my child's participation in this study.

Signature of Parent/Guardian: _____

Printed Name of Parent/Guardian: _____

Printed Name of Child: _____
Signature of Administrator: _____
Printed Name of Administrator: _____
Date: _____

VIRGINIA POLYTECHNIC INSTITUTE & STATE UNIVERSITY
Informed Consent for Research Participants—Child Assent Form

TITLE: Firearms-related beliefs and behaviors in young children and their parents.
INVESTIGATORS: Kirsten Bradbury, M.S., and Jack W. Finney, Ph.D.

I. PURPOSE OF STUDY:

Researchers from Virginia Tech want to know what kids and parents think and feel about things, so we're doing a research study. The paper I'm reading to you now is called a "Child Assent Form." This form tells about our study, and tells you what it will be like for you if you want to help us with our study. You do not have to be in our study if you do not want to. Helping with this research is your choice, and you may say no if you do not want to talk to us. You may ask us questions any time.

II. PROCEDURE:

If you decide to be in our study, your Mom or Dad (or another grown-up in your family) will fill out some paper forms for us while you and I talk. You will listen to a story, and you will use your imagination to tell us what you would do if you were the kid in the story. We will be done in one hour or sooner.

III. RISKS:

Being in this study is not dangerous or bad for you. If you feel bad while you are talking to us, you should tell us and we will help you.

IV. BENEFITS:

By answering our questions, you will be helping us to better understand lots of important things about kids.

V. ANONYMITY and CONFIDENTIALITY

These are big words that mean that anything you tell us today we can't tell anyone else. We will take your answers to our questions, and we will add your answers together with the answers of lots of other kids. We will do a lot of math with the answers. We will never tell anyone what your own answers were, and no one will know that you were one of the kids in our study. When you are done talking to us today, you should talk to your Mom or Dad (or another adult in your family) about what it was like to be in a research study.

VI. COMPENSATION:

When we are done today you will get to pick a toy as a prize, and we will give a Wal-Mart gift certificate to your Mom or Dad (or the adult in your family who answers our surveys). If you do not answer all our questions or if you decide you do not want to be in the study, you will still get to pick a prize.

VII. FREEDOM TO WITHDRAW:

You are allowed to stop being in our study any time, even in the middle. You do not have to answer questions you do not want to answer. Nothing bad will happen to you if you stop talking to us.

VIII. APPROVAL OF RESEARCH:

There are teams of people at our university who make sure research is safe for kids and will not hurt them. These teams of people are called the "Human Subjects Committee (HSC) of the Dept. of Psychology," and the "Institutional Review Board for Research Involving Human Subjects (IRB) of Virginia Polytechnic Institute and State University." They say that we are allowed to ask you the questions we will ask you today.

IX. SUBJECT PERMISSION:

By writing your name below, you are saying that this paper has been read to you and that you understand what we said about this paper. You understand that you can ask questions anytime and can stop being in the study anytime. And, if you have more questions later, you can call—or you can have your Mom or Dad (or another adult in your family) call—any of these people:

Primary Investigator:	Kirsten Bradbury, M.S.	(540) 231-8504
Faculty Advisor:	Jack W. Finney, Ph.D.	(540) 231-6670
Chair, IRB:	David Moore, DVM	(540) 231-4991

_____Child's Name **YES** **NO**

Appendix I

Multivariate Linear Regression Analysis of children's crisis responses (rank ordered by competency on a 1-4 scale).

Variables Entered/Removed

Model	Variables Entered	Method
1	child's age (months) residence (0 = town, 1 = rural) child's sex (0 = male, 1 = female) guns at home (0 = no guns, 1 = guns)	Enter

a All requested variables entered.

b Dependent Variable: Rank-ordered 1-4 response competency (1 = aggressive/gun, 2 = bold, 3 = passive, 4 = competent help-seeking)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.461	.212	.152	1.09	.212	3.501	4	52	.013

a Predictors: (Constant), child's age (months), residence (0 = town, 1 = rural), child's sex (0 = male, 1 = female), guns at home (0 = no guns, 1 = guns)

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.555	4	4.139	3.501	.013
	Residual	61.480	52	1.182		
	Total	78.035	56			

a Predictors: (Constant), child's age (months), residence (0 = town, 1 = rural), child's sex (0 = male, 1 = female), guns at home (0 = no guns, 1 = guns)

b Dependent Variable: Rank-ordered 1-4 response competency (1 = aggressive/gun, 2 = bold, 3 = passive, 4 = competent help-seeking)

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.112	.850		.132	.895
	child's age (months)	3.437E-02	.010	.440	3.393	.001
	guns/home (0 = no guns, 1 = guns)	-.144	.339	-.060	-.425	.672
	child's sex (0 = male, 1 = female)	.195	.302	.081	.645	.522
	residence (0 = town, 1 = rural)	-.516	.328	-.220	-1.572	.122

a Dependent Variable: Rank-ordered 1-4 response competency (1 = aggressive/gun, 2 = bold, 3 = passive, 4 = competent help-seeking)