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“We’ve Got a Gun?”: Comparing Reports of Adolescents
and their Parents about Household Firearms

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Abstract

Firearms are a leading cause of mortality among adolescents, and the guns that adolescents use to harm themselves or others often come from their own homes. In this statewide, multi-language, community-based survey of 5,704 co-residing pairs of adolescents and their parents, we asked about guns in the home and compared their responses. The proportions of parents and adolescents responding affirmatively were similar: 25.7% and 26.8%, respectively, for any guns; 15.0% and 13.2%, respectively, for handguns. A paired analysis documented substantial agreement for whether there was any gun in the home and less agreement about whether there was a handgun in the home. The amount of agreement and disagreement was related to household composition and gender of the respondents. The disagreement was substantial for some groups (e.g., when boys residing in households containing a single mother and no other adults reported that there was a gun in the home, 64.8% of their mothers said that there was not a gun in the home). Implications for research and intervention are discussed.

Keywords: adolescents, concordance, firearms, violence

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Adolescents and Firearms

The impulsivity, mood swings, and sense of invulnerability that are hallmarks of adolescence are widely acknowledged as incompatible with easy access to lethal weapons. Consistent with that perception, persons under the age of 18 years are, with a few exceptions, prohibited from possessing a handgun (18 U.S. Code Section 922).¹

Recent surveys using representative samples indicate, however, that gun carrying and gun use occurs with some regularity among adolescents. Violence-related behaviors have decreased in U.S. high schools in the past decade (Centers for Disease Control and Prevention, 2004), yet nearly one in sixteen U.S. high school students (6.1%) report having carried a firearm in the previous 30 days (Grunbaum et al., 2004). Although some of the gun carrying is linked to recreation -- about one-fifth of adolescents use guns in hunting and target shooting (Vittes & Sorenson, 2005) -- self-defense is the most commonly cited reason for gun carrying by adolescents (Cook & Ludwig, 2004).

Recreation and enhancing ones sense of self protection are not the only circumstances under which adolescents use guns. In 2001, a total of 2,777 deaths among U.S. 10- to 19-year olds were attributed to firearms (Anderson, Minino, Fingerhut, Warner, & Heinen, 2004), a figure that comprises 15.0% of all deaths of 10- to 19-year olds during that year (Arias, Anderson, Kung, Murphy, & Kochanek, 2003). The proportion of 15- to 19-year olds who used a gun to commit suicide was comparable to that of the overall population (52.0% vs. 55.1%) but the proportion who were murdered with a firearm was substantially higher (80.3% vs. 55.9%).² Age is a potent personal characteristic: even when other demographic factors are taken into consideration, persons under the age of 18 are more likely than older persons to use a firearm to kill themselves or someone else (Sorenson & Berk, 1999).

Research suggests that, among adolescents, a majority of the unintentional and self-inflicted firearm injuries – both fatal and nonfatal - are from a firearm that was obtained from the family home (Brent et al., 1991; Grossman, Reay, & Baker, 1999; Shah, Hoffman, Wake, & Marine, 2000). Likewise,

guns that adolescents use against others often come from the home. For example, in the spate of fatal school shootings in the 1990s, the most common source of the gun was the perpetrator's home (Centers for Disease Control and Prevention, 2003). Guns from the family home are used without adult knowledge or supervision with surprising regularity. One in twenty California adolescents reports having handled a gun without adult knowledge or supervision; half of the unsupervised handling involved shooting (Miller & Hemenway, 2004).

In this investigation, we focus on a primary source of guns for adolescents, that is, the family home. We concentrate on availability rather than motivation to use or the actual use of firearms from the home because whether there is a gun in the home is a first step in understanding adolescents' use and misuse of firearms. A key consideration is how to measure whether there is a gun in the home.

Assessing Firearm Prevalence

Assessing the proportion of U.S. households that contain a firearm would be relatively easy if there were adequate administrative records. However, this is not the case. Although a federal background check is required of the purchaser of each firearm in the U.S., firearm purchases are not part of – in fact, they are prohibited from being recorded in – an on-going national database (U.S. Public Law 108-199, Consolidated Appropriations Act of 2004). In contrast to motor vehicles, where the vehicle is registered and the driver is licensed, most states do not have comparable systems for firearms.³ Among those that do, compliance is believed to be poor (Vernick and Hepburn, 2003). Other ways of assessing prevalence, such the annual inspection procedures in place in Switzerland,⁴ are not feasible in the U.S. due to privacy and civil liberties considerations as well as practical matters related to conducting a door-to-door inspection of each U.S. household. Population-level proxies for gun ownership (e.g., number of hunting licenses, number of subscriptions to gun magazines, proportion of suicides by a firearm) can be used in studies with an ecological design but can not be used to address research questions, such as the one at hand, that require individual-level data.

Self-report surveys are the least intrusive and most cost effective way to gather individual-level data about household firearms. Only two studies, to our knowledge, have attempted to assess the validity

of self-reports about gun ownership. In the first, in-person interviews were attempted with 75 people who had recently registered a handgun in Seattle, WA or Memphis, TN (Kellermann, Rivara, Banton, Reay, & Fligner, 1990). Of the 34 responses (22 households could not be reached, 18 refused to participate, and one provided unusable data), 31 (91.2%) reported that there was a gun in the home and three reported that there previously had been a gun in the home. In the second study, telephone interviews were conducted with three random samples in Ingham County, MI: those who had purchased a hunting license in the previous year, those who had registered a handgun in the previous year, and the general adult population (Rafferty, Thrush, Smith, & McGee, 1995). The investigators report that 87.3% of the hunting license group, 89.7% of the handgun registration group, and 34.7% of the general adult population reported that there was a gun in the home.⁵ Both sets of researchers conclude that self-report is a reasonable method by which to assess whether there is a gun in the home. These two studies attempted to assess true positives and false negatives (i.e., when a respondent says there is not a gun when there is one in the home) in respondent reports; as noted above, ethical and practical considerations limit the ability to assess true negatives and false positives (i.e., when a respondent says there is a gun when there is not one in the home).

Surveys of adults indicate that about one-third of U.S. homes contain a firearm; about one fifth contain a handgun (Smith, 2001). Homes of Whites and of more affluent persons are more likely to contain a firearm, although ownership appears to drop off at the highest economic levels (e.g., Smith, 2001). Women are less likely than men to report that there is a gun in the home, and persons residing in marital households are more likely than those in nonmarital households to report that there is a gun in the home (e.g., Smith, 2001). The findings may be related given that most nonmarital households are headed by women.

In an attempt to reduce the potential confounding effect of household composition when examining the association between household firearm ownership and gender, Ludwig and colleagues (1998) limited their inquiry to married persons. In multiple national samples, they found that wives were less likely than husbands to report that there is a gun in the home. However, in an analysis of data from

married respondents who participated in the General Social Survey data from 1980, 1990, and 2000, Leggault (2005) found no gender difference. In both studies, the wives who were interviewed were not from the same households as the men who were interviewed. The issue at play here is one of measurement as well as substance. The difference in the reports of men and women may be related to the fact that they are derived from independent samples of men and women. The work of Ludwig and colleagues (1998) suggests otherwise, but the question has yet to be put to a direct test. At this point, we do not know whether the gender difference is “real” or a methodological artifact.

Surveys of adolescents about firearms

Despite concern about adolescent gun carrying and the source of their guns, surveys of adolescents themselves are relatively rare. In addition, most prior research with adolescents has been based on specialized samples such as high school students (e.g., Callahan & Rivara, 1992; Kulig, Valentine, Griffith, & Ruthazer, 1998) or incarcerated juveniles (e.g., Webster, Freed, Frattaroli, & Wilson, 2002; Sheley & Wright, 1995), typically from a single, often urban, locale (e.g., Lizotte, Tesoriero, Thornberry, & Krohn, 1994; Vaughan et al., 1996). To our knowledge, there has been only one survey of a representative sample of community-residing adolescents that asks adolescents and adults of the same household about guns in the home. Data from this survey comprise the data used herein.

Previous analyses of these data indicate that the gender discrepancy about whether there is a gun in the home that has been observed among adult respondents is evident among adolescents who reside in marital households (Cook & Sorenson, 2006). Comparing responses of adolescents to those of adults in marital households, we found little evidence of an age gap -- adolescents are almost as likely as adults to report that there is a gun in the home. Whether these findings hold for nonmarital households or whether they hold when a paired analysis is conducted is the focus of the present investigation.

The rationale for examining nonmarital households is simple: the link between marriage and parenthood has weakened (e.g., Nock, 2000). In 2002, 49% of all U.S. births were to women without a partner in the household (Downs, 2003) and, in 2003, nearly one out of three (31.6%) people under the age of 18 years were not living with two married parents (U.S. Census Bureau, 2004).⁶ Given current

patterns of child bearing and divorce, by the time they are 18 years old, over half of the U.S. children who are born to a married couple will live at least two years of his or her life with one parent (Hale, 2000). Moreover, directly relevant for the present investigation, whether marital or nonmarital, some households contain one or more additional adults who may legally have a firearm. Therefore, we include number of adults in the household in our indicator of household composition.

The rationale for the paired analysis is similarly straightforward: to examine whether the pattern of results obtained for adults and adolescents holds across respondent gender and household composition. If the pattern of overall results (i.e., the marginals) is observed for cells within a contingency table, we can be confident that the finding is robust. If the pattern for the marginals is not observed within the cells of the table, it indicates that exposure differs for some segments of the population.

In examining the agreement between adolescents and adults, we make no assumptions regarding “truth.” A long-established literature has assessed concordance in the responses of study participants, including parents and children. Rather than designate one as the bearer of the truth, the information each person reports can be considered to be useful in ascertaining the full reality of behavior, mood, and physical symptoms (e.g., Epkins, 1996; Hoek, Wypij, & Brunekreef, 1999; Johnston, Steele, Herrera, & Phipps, 2003; Sourander, Helstela, & Helenius, 1999; Tarullo, Richardson, Radke-Yarrow, & Martinez, 1995; Whiteman & Green, 1997). We extend this approach to a tangible household good, that is, a firearm.⁷ In addition to reflecting reality, concordance may assess knowledge – parents may actively hide a gun from their children, as might adolescents hide a gun from their parents, and, thus, neither would be in full possession of the truth about guns in the household. And finally, concordance may reflect perception – to foster a sense of protectiveness, a parent may tell a child that he or she has a gun to use against an intruder when, in fact, no gun is in the household. In sum, there are several reasonable interpretations for differences in the reports of adolescents and adults.

Study Goals

In the present investigation, data about whether there was a gun in the home were gathered from 5,704 pairs of adults and adolescents who reside in the same household. Our primary purpose was to

describe patterns of respondents' reports of firearms in the home, not to seek a causal explanation for patterns of firearm ownership. We set out two primary goals:

- a) To compare the reports of adolescents and adults about whether there is a firearm in the home.

The purpose of the group-level analysis is to estimate the prevalence of households with firearms and how the prevalence varies according to household composition and respondent gender.

- b) To examine discrepancies in the self-reports of adolescents and adults from the same household about whether there is a gun in the home. The purpose of the paired analysis is to assess discrepancies in responses with a particular focus on respondent gender and household structure.

Whereas the research was motivated largely by methodological concerns, some findings of substantive interest and importance emerged in the analysis and will be discussed as well. Analyses are limited to households containing an adolescent, therefore, findings are not descriptive of the population of all households.⁸

Methods

Data are from a supplement to the first wave of the California Health Interview Survey (CHIS-2001). Interviews were conducted in six languages (English, Spanish, Chinese [Mandarin and Cantonese dialects], Vietnamese, Korean, and Khmer) so as to include the largest number of non-English speaking persons in California. The random-digit-dial survey of 55,248 households was fielded from November 2000 through October 2001.

All California households with a telephone comprised the sampling frame. Each computer-generated telephone number was screened for eligibility (e.g., language fluency), and one adult per household was randomly selected to be interviewed. About one in six of the participating adults were the parent or guardian of a co-residing 12- to 17-year old. If multiple adolescents resided in the household, one was selected at random. Verbal consent to interview the adolescent was sought from the adult and, if given, sought from the adolescent. When both consented, the adolescent also was interviewed via telephone. A total of 63.5% of the adult parents or guardians gave permission for their adolescent to be interviewed, and 84.5% of the adolescents agreed to be interviewed.⁹ For ease of exposition, we will

refer to the adult as the parent.

The analyses reported herein are based on the 5,704 adolescent-parent pairs who completed the survey.¹⁰ The 5,704 parents were an average of 43.5 years old, and more than half were women (63.3%). Most parents were non-Hispanic Whites (59.4%), residing in an urban or suburban locale (73.0%), and had participated in the labor force in the previous week (77.6%). Although most were U.S. citizens (70.1% were U.S.-born citizens, 13.5% were naturalized citizens), a substantial minority (35.7%) spoke a language instead of or in addition to English at home. Educational attainment varied widely among the parents: 17.6% reported 11 or fewer years of schooling, 24.2% reported 12 years or a high school diploma or its equivalent, 28.6% reported some college (including trade school and AA degrees), 17.6% reported a bachelor's degree, and 12.0% reported graduate school or a graduate degree. Among the adolescents, 50.0% were female, 56.3% were non-Hispanic white, and 92.7% were U.S. citizens. The adolescents were roughly equally distributed across each year of age (i.e., 12 to 17 years). Almost all (98.2%) of the adolescents reported being in school, and about half (48.1%) reported that they engaged in paid work. The distribution of the sample by the variables of primary interest – adolescent gender, parent gender, and household composition -- is reported in Table 1. Whereas most of the adolescents resided with two married parents and no other adults, 46.6% did not.

Study Measures

A wide range of health-related topics was addressed in the interview. There was very little overlap in interview content for the adults and for the adolescents; one exception was the topic of household firearms. Near the mid-point of the interview, respondents were asked about guns in the home. The questions asked of adults and adolescents were not identical but comparable. Adults were asked:

“Are any firearms now kept in or around your home? Include those kept in a garage, outdoor storage area, car, truck or other motor vehicle. When I say firearms or guns, I mean I mean rifles, shotguns, pistols, revolvers, or other firearms. I do NOT want you to include BB guns, air guns, or toy guns.”

Adolescents were asked:

“When I say firearms or guns in these next questions, I mean rifles, shotguns, pistols, revolvers, or other firearms. I do NOT want you to include BB guns, air guns, or toy guns.

Does any member of your household happen to keep a firearm at home? It could be kept in your home, garage, outdoor storage area, car, truck, or other motor vehicle.”

If the respondent answered “no” to the screener question, the interviewer skipped to the next section. If the respondent answered affirmatively to the screener, he or she was asked a few follow-up questions.

We focus herein on answers that can be derived from the questions asked of both the adult and adolescent respondent, namely, whether there was any gun and any handgun in the household. Demographic information collected from the adults and adolescents was used in analysis..

In accordance with current survey research practices, the data collection instruments were reviewed for cultural appropriateness and adapted accordingly then translated and backtranslated. Minor adjustments made to ensure equivalence.

Analysis

The first analysis, frequencies and crosstabulations, generated descriptive data regarding the parents and adolescents as groups. These proportions document the proportion of parents and adolescents who reported that there was a gun in the home overall and by respondent gender and household composition. Analyses were conducted for any gun (vs. no gun) and, among respondents reporting that there was a gun in the home, for handgun (vs. no handgun).

The central analysis, a paired analysis of the responses of parents and adolescents, examined agreement and disagreement within respondent pairs. We considered several ways to conduct the paired analysis; some traditional methods were set aside. Given that we did not assume that either the parent’s or the adolescent’s response constituted the “gold standard,” calculations of sensitivity and specificity were not indicated. In addition, we set aside kappa statistics, which are used to measure agreement corrected for chance. The value of kappa depends upon the true frequency of the variable in the sample as well as the level of agreement between observers. Kappa statistics were considered less informative than desired in the present investigation because the underlying prevalence was unknown for the groups.

Even when the level of agreement between observers is identical, if the prevalence of the condition differs, the two values of kappa will be very different, misleadingly implying different levels of agreement.

To assess concordance (i.e., agreement in the responses) between the parents and adolescents, a series of dummy codes were developed. To illustrate, parents who responded “yes” to whether there was a gun in the home were coded 1, those who responded “no” were coded 0; the same was done with the adolescents. These dummy codes were used to create a new variable indicating the proportion of agreement and, when disagreement occurred, its direction and proportion. The adolescent’s dummy codes were subtracted from the parent’s dummy codes. The resulting numbers indicated whether there was agreement (0: both said no or both said yes) or disagreement (1: parent said yes, adolescent said no; -1: parent said no, adolescent said yes). The proportions resulting from these analyses document the amount and nature of disagreement.

The resulting proportions and the corresponding sample size on which each proportion is based were entered into regression models. Three weighted least squares regressions were conducted to provide appropriate tests of statistical significance for variables predicting: 1) agreement (parent and adolescent say yes, parent and adolescent say no); and each of two forms of disagreement: 2) parent says yes, adolescent says no, and 3) parent says no, adolescent says yes. To resist over-interpreting small differences (differences of little substantive importance would be important in the large sample), we limited tests of statistical significance to our final regression analysis.

Results

In this section we present four tables of data by household composition and respondent gender: reports of a gun in the home; a paired-comparison of reports of gun in the home; an examination of disagreement within pairs about whether there is a gun in the home; and, regression coefficients from weighted least squares regressions in order to assess statistical significance. We turn first to the percentage of homes that are reported to contain a gun, a preliminary analysis that does not take into account the paired nature of the data. This information provides basic prevalence data (i.e., marginals)

that can be compared to other findings and establishes a basis for subsequent analyses.

About one fourth of the parents and adolescents (25.7% and 26.8%, respectively) report that there is a gun in the home. The proportion of each reporting that there is a handgun in the home is lower but similar to one another (15.0% and 13.2%, respectively). Mothers of adolescents were less likely than fathers of adolescents to report that there was a firearm in the home (20.8% vs. 34.0%, respectively). This same gender pattern was observed among adolescents, although the difference was less pronounced: 25.2% of girls and 28.5% of boys reported that there was a firearm in the home. These gender-related findings for any gun in the home also were observed for a handgun in the home. Although the gender difference was smaller, mothers were less likely than fathers to report that there was a handgun in the home (15.4% vs. 18.1%, respectively). The gender discrepancy observed in adolescents' reports of whether there was any gun in the home was more pronounced for handguns: 11.2% of girls and 15.2% of boys reported that there was a handgun in the home.

A total of 30.6% of the adults in two-parent households (with no additional adults) reported that there was a firearm in the home. A slightly lower proportion (28.4%) of parents in marital households with one or more additional adults reported that there was a gun in the home. Substantially lower proportions of parents in nonmarital households reported that there was a gun in the home (13.6% in one-parent households, 13.3% in households with one parent and one or more adults). A similar pattern was observed for adolescents: those in marital households were more likely to report that there was a gun in the home than those in nonmarital households (29.8% in married two-parent, 25.2% in married two parent with at least one additional adult, 18.7% in one-parent, and 21.0% in one-parent with at least one additional adult households). These household-composition-related findings for any gun in the home also were observed for a handgun in the home. Parents in marital households were more likely than those in nonmarital households to report that there was a handgun in the home (marital: 18.1% for both parents, 15.4% for both parents plus one or more adults; nonmarital: 8.1% for one parent, and 8.8% for one parent plus one or more adults). The marital vs. nonmarital household distinction was not as evident when it came to adolescents' reports of handguns in the home: 15.1% for two parents, 12.2% for two parents plus

one or more other adults, 10.2% for one parent, and 9.8% for one parent plus one or more other adults. In sum, the highest proportion of adults and adolescents reporting that there was any gun or a handgun in the home were those living in marital households with no other adults.

Visual inspection of Table 2 (statistical analyses will be reported later) suggests that no one variable is driving the findings. Consistent with findings reported above, it appears that a higher proportion of males (both boys and men) than females (both girls and women) report that there is any gun and a handgun in the home. The proportion of parents and adolescents reporting that there is a gun in the home (both gun and handgun) appears to be higher in marital than nonmarital households. There is some exception to these general patterns, however: when from a nonmarital household and paired with an adult male respondent, girls appear to be more likely than boys to report that there is a handgun in the home. These analyses described the reports of adults and adolescents as groups.

Analysis of paired data

In the next set of analyses, we took into account the paired nature of the data, that is, we took into consideration the fact that the adults and adolescents came from the same household and assessed how much they agreed and disagreed and how much and in what ways they disagreed. Unlike Table 2, which presented the percentage of homes reported to have a gun, Tables 3 and 4 report percent of agreement in the pairs of data.

Parent-adolescent agreement is substantial (86.7%) about whether there is any gun in the home. Roughly comparable proportions of the parent-adolescent pairs can be found in the two types of disagreement: parent says yes, adolescent says no: 6.4%; parent says no, adolescent says yes: 6.9%. The same general pattern of findings is observed for whether there is a handgun in the home, but the proportions are markedly different: agreement drops to 66.5% and disagreement is higher for parent says yes, adolescent says no versus parent says no, adolescent says yes (19.4% and 14.1%, respectively).

Adolescent-parent agreement about whether there is a firearm (including a handgun) in the home appears to differ by gender of the respondents and household composition. As shown in Table 3, however, agreement between the parents and adolescents about whether there is any firearm in the home

was substantial and consistent across household composition and gender pairings of the parents and adolescents (range = 83.5% - 89.2%). There was so little variability in the findings that no discernible pattern across groups is readily apparent. (We continue to limit ourselves to visual inspection of the data; the final set of analyses tests for statistical significance.) Four other findings regarding any gun in the home merit mention. First, although the sheer number of respondents disagreeing is lower, when there was disagreement there was a larger range among the percents across types of household composition: parent yes, adolescent no: 2.1% - 11.8%; parent no, adolescent yes: 3.4% - 11.0%. Second, the marital and nonmarital households appeared to differ from one another in terms of the nature of the disagreement. A higher percentage of marital (vs. nonmarital) households were in the “parent say yes, adolescent says no” group and, conversely, a higher percentage of nonmarital (vs. marital) households were in the “parent says no, adolescent says yes” group. Third, the most disagreement about whether there was a gun in the home appears to be for married households in which a male adult respondent says yes and the adolescent, regardless of gender, says no. And, fourth, regardless of respondent gender, nonmarital households had the highest percent of parent says yes and adolescent says no disagreement. There was less agreement about handguns: The pairs in each of household composition and respondent gender group had more than 80% agreement for “any gun,” but only 66.5% (range: 54.0% - 81.8%) agreement about whether there was a handgun in the home.

The lack of agreement merits further investigation. As shown in Table 4, although the percentages are roughly similar, for both any gun and handgun the percentage is higher for the parent saying no when the adolescent says yes. This pattern holds for nearly each cell for any gun and for a handgun. For example, when a parent says there is a gun in the home, 19.7% of the time the adolescent says there is not a gun in the home. But when an adolescent says there is a gun in the home, 25.2% of the time the parent says there is not one in the home. Even when the numbers become quite small, the pattern of findings generally holds. In nonmarital (vs. marital) households, when adolescents report that there is a gun in the home, parents appear to be more likely to say that there is not a gun in the home. This finding also is observed for reports about handguns.

Finally, we conducted a weighted least squares regression to test the statistical significance of adult gender, adolescent gender, and household composition in predicting response agreement and disagreement. The cell of the table, agreement in the parent-adolescent pair, is the unit of analysis. As shown in Table 3, each cell has a proportion that is the response variable value for that cell. Each cell also is characterized by the presence or absence of certain household characteristics (e.g., two parents) and characteristics of the respondent (e.g., gender). Because each observation (i.e., cell) is weighted by the number of observations used to compute the proportion in that cell, the proper total n results (see bottom row of Table 5). From this, the meaning of the regression coefficients follows as usual. The value of the intercept is the proportion when all of the predictors take on values of zero -- marital households with two parents, a responding father, and a responding adolescent boy -- and serves as the reference category. Because different variables may be at play, we ran separate regressions for each type of disagreement: one least squares regression for response pairings in which the parent reported that there was and the adolescent said there was not a firearm in the home and another for pairings in which the parent said there was not and the adolescent said that there was a gun in the home.

In the first equation (first data column of Table 5), the intercept is .8639. The proportion of agreement increases by .0001 when a marital, two-parent household with one or more additional adults is compared to a marital, two-parent household. This is a trivial amount. For nonmarital households with one parent, the proportion increases by .0046 (i.e., from .8639 to .8685), which still is a very small change. In fact, although almost all of the variables are statistically significant, none of the predictors for the first equation make much of a substantive difference.

In the second data column of Table 5, we begin to see values in the second decimal place of the coefficient. Nonmarital households have about 3% less agreement than married, two-parent households. Disagreement is about 4% less when a mother and 2% more when a girl is the respondent. These values are a bit lower in the next equation (parent no, adolescent yes). As expected, the direction of the change related to respondent gender is reversed.

Changes approaching or exceeding 10% are observed in the equations predicting disagreement

about whether there is a handgun in the home (fifth and sixth data columns of Table 5). In the equation for parent says yes and adolescent says no, gender is important: disagreement is reduced by 8% when the adult respondent is a mother and disagreement is increased by 10% when the adolescent respondent is a girl. Coefficients in the equation for parent says no and adolescent says yes about whether there is a handgun in the home, nonmarital households containing one adult are associated with a 12.5% increase in disagreement. Nonmarital households containing two or more adults also have more disagreement (8.1% higher) than two-parent marital households about whether there is a handgun in the home. The gender of respondents continues to be substantively, as well as statistically, important. Mothers are associated with more disagreement and girls are associated with less disagreement when the parent says that there is not and the adolescent says there is a handgun in the home.

The adjusted R^2 suggests that concordance can be explained fairly well using these few predictors. Disagreement, in particular, is well accounted for by household composition and respondent gender (adjusted R^2 : .66 - .94).

Discussion

Agreement about whether there is a gun in the home is high (over 85%) among parents and adolescents residing in the same household. This finding holds regardless of household composition and respondent gender, two variables that have been shown to be important in prior research about guns in the home. In addition, although one would expect that additional adults in a household would increase the likelihood that there was a gun in the home, we found no evidence for this in either the marital or nonmarital households. These findings suggest that researchers can obtain reliable data about whether there is a firearm in the home from the report of one parent or one adolescent from a household.

When trying to assess whether there is a handgun in the home, however, researchers should proceed with some caution if the report is from one parent or one adolescent. Nonetheless, two-thirds agreement about whether there is a handgun in the home, as was obtained in the present investigation and is lower than agreement for any gun, may still be sufficient when examining broad patterns in survey data. Gender differences – for both adults and adolescents – were more pronounced in disagreement

about whether there was a handgun (vs. any gun) in the home. And, finally, household composition was an important factor in agreement about whether there was a handgun in the home: The most notable substantive finding is that when a parent says that there is not and the adolescent says that there is a handgun in the home, parent-adolescent disagreement is about one tenth higher in nonmarital households. Whether this observation is of sufficient magnitude to matter, however, remains to be seen. The finding may be important when examining responses of unmarried mothers and their adolescent children about handguns in the home: when an adolescent girl said that there was, over half of the mothers said that there was not a handgun in the home. The discrepancy was even greater when the adolescent was a boy: when a boy said that there was, nearly three-fourths of the mothers reported that there was not a handgun in the home.

Methodological considerations

The California Health Interview Survey, a state-of-the-art telephone survey,¹¹ is designed to capture the diversity of California's population by oversampling particular ethnic groups and geographic locales and conducting interviews in six languages. Nonetheless, the overall response rate was not optimal. Participation rates in telephone surveys have dropped substantially in the past few decades, and the drop has accelerated in recent years. Although research on response rates has focused primarily on respondent refusal, the inaccessibility of potential respondents is a growing concern (e.g., Piekarski, 1999; Tuckel & O'Neill, 2002).

Response rates are further depressed in studies of adolescents by the double layer of informed consent. In the present investigation, 63.5% of parents gave permission for their adolescent to be interviewed, and 84.5% of adolescents agreed to be interviewed, resulting in a response rate of 53.7%. Taking into account the overall adult response rate, the adolescent response rate drops farther. However, whether participating and nonparticipating adults were equally likely to have an adolescent in the home can not be tested, therefore the "true" response rate can not be ascertained. Nonetheless, the sample is roughly comparable to U.S. Census data on key variables (e.g., age, income). The patterns in the data probably are more robust than the point estimates.

A limitation of this research, shared with other self-report surveys about household firearms, is the inability to ascertain validity of the responses. Although researchers can obtain valid information on private behaviors that individuals may wish not to disclose (e.g., binge drinking during pregnancy [Kesmodel & Frydenberg, 2004]) and although few participants refused to answer the questions about firearms, we acknowledge that respondents may have not been fully truthful. However, only if social desirability or other demand characteristics were differentially associated with participants' responses would they have had an effect on the patterns of response agreement.

Implications

In the present investigation, we focused on the reports of co-residing adults and adolescents about whether there is a gun in the home. Prior studies indicate that about one third of adults and about one fifth of adolescents report that there is a gun in the home, but no research had examined the reports of respondents from the same household. In the present investigation, we examined the degree of agreement across two key demographic characteristics and gave credence to the pattern of findings rather than to assuming or ascertaining which of the respondents (i.e., the parents or the adolescents) constitutes the “gold standard.”

By and large, there is substantial agreement between adolescents and their parents about whether there is a gun in the home. We are unable to ascertain response accuracy but, to the degree that they are correct, it generally appears not to make a difference whether an adolescent or a parent is surveyed – about the same prevalence estimate is obtained. Gender, however, is important, with both girls and women being less likely than boys and men to report that there is a gun in the home.

Although whether the respondent is an adolescent or a parent is not of major methodological concern when making prevalence estimates about household gun ownership, when there is disagreement between adolescents and their parents it is not noise, it is patterned. The pattern of disagreement about whether there is a gun in the home has implications, one methodological and one substantive. First, if studying households in which disagreement about the presence of a gun is common, it does matter who is sampled. In nonmarital households, regardless of the number of adults they contain and regardless of the

gender of the respondent, adolescents and their parents sometimes have substantial disagreement about whether there is a gun, particularly a handgun, in the home. In about one third of all households, the adolescent and parent do not agree whether there is a handgun in the home; again, disagreement is substantially higher in nonmarital households. It is not possible to tell from these data whether the disagreement is due to selective communication about the handgun(s), genuine ignorance about what the home contains, or some other consideration, which brings us to the second point: The effectiveness of efforts to hold parents accountable for adolescents and their guns likely will be hampered unless parents, particularly parents in nonmarital households, are aware of guns in the home.

Parents largely, albeit not exclusively, control firearm availability and access in the home, sometimes to the detriment of their offspring. For example, in a randomized psychotherapy clinical trial with 106 adolescents with major depression, parents were urged to remove firearms from their homes (Brent, Baugher, Birmaher, Kolko, & Bridge, 2000), but only 26.9% of those who had guns removed them and 17.1% of those who did not have guns acquired them. Whether there is a firearm in the home also depends upon the behavior of adolescents, and some bring guns into the home without the knowledge of their parents.

In closing, two observations that may be relevant to adolescents and household firearms merit mention. First, across U.S. states, higher levels of firearm ownership are associated with significantly lower levels of mutual trust and civic engagement (Hemenway, Kennedy, Kawachi, & Putnam, 2001). As the authors note, “While the analysis cannot show causation, states with heavily armed civilians are also states with low levels of social capital” (2001, pg. 484). Whether this observation holds at the household level remains to be seen as does whether mutual trust and engagement between parents and adolescents is related to whether there is a gun in the home. Second, attitudes and experiences with firearms may be transmitted across generations. For example, recreational firearm use appears to be passed down within families, typically from men to boys (Vittes & Sorenson, 2005). A recent analysis of several national surveys indicates that, even when taking into account multiple characteristics known to be related to gun ownership, persons who lack (vs. have greater) faith in the federal government are more

likely to own guns (Jobu & Curry, 2001). Whether and how such perceptions play out within the family merits investigation. It does appear that adolescents' attitudes about firearms are largely like those of adults: even those from gun-owning homes overwhelmingly support more restrictive firearm policies (Sorenson, 1999; Teret et al., 1998; Vittes, Sorenson & Gilbert, 2003).

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Footnotes

¹ The focus on handguns is relevant because handguns are the most common method used in homicides and suicides in the U.S. and because, compared to shotguns and rifles, they are easily concealed. Long-guns (rifles and shotguns) are not subject to the same federal restriction and most states allow persons under the age of 18 to have a long gun.

² Percentages were obtained using numbers provided in Anderson et al. (2004).

³ Hunters generally are required to be licensed. Such licenses, however, can include non-gun hunting (e.g., crossbow hunting) and other sports activities (e.g., trapping).

⁴ Upon reaching the age of 20 years, Swiss men serve a mandatory year of military service followed by a short period of duty in subsequent years. Each serviceman is issued and held accountable for a semi-automatic weapon and a sealed box of ammunition, which is inspected annually.

⁵ Taking into account refusals, which were higher for the first two samples (7.6% and 9.2% vs. 5.7% for the general population), we calculate that 82.9% of the hunting license and 79.2% of the handgun registration groups reported that there is a gun in the home.

⁶ A total of 31.6% were not living with two married parents: 63.9% of Black children, 35.4% of Hispanic children, 22.7% of non-Hispanic White, and 16.9% of Asian children.

⁷ To our knowledge, there is no prior research on adult-adolescent concordance in reports of durable consumer products in the household (e.g., dishwasher) upon which to call.

⁸ Readers interested in prevalence data and multivariate analyses of the adolescents' responses about whether there is a gun in the home, as well as whether the teen has his or her own gun, close friends have a gun in their home or of their own, and perceptions of peers' gun ownership, are referred to Sorenson and Vittes (2004).

⁹ For more detail about the survey methodology, see the five methodology reports posted at <http://www.chis.ucla.edu/methods.html> To calculate response rate, the RR4 formula of the American Association for Public Opinion Research was used.

¹⁰ A total of 5801 adolescent-adult pairs completed the survey. Excluded from these analyses are

the 67 respondent pairs in which the adolescent lived with neither parent, the 25 respondent pairs in which the adolescent was described as living with one married parent, and the 5 pairs for which living arrangements were not ascertained.

¹¹ Cultural review and, when necessary, adaptation of each question occurs, advance letters are sent in five languages to two thirds of the potential sample, financial incentives are employed, and interviewers skilled in refusal conversions contact each potential respondent who initially refuses to participate.

Table 1

Sample characteristics, by key demographic characteristics, 5,704 co-residing parent-adolescent pairs

	Respondent gender ¹			
	<u>FF</u>	<u>FM</u>	<u>MF</u>	<u>MM</u>
	% (n)	% (n)	% (n)	% (n)
Marital				
2 parents	15.1 (863)	15.2 (869)	11.4 (648)	11.7 (668)
2 parents +	6.0 (341)	5.2 (296)	4.2 (244)	4.8 (272)
Nonmarital				
1 parent	7.9 (448)	6.7 (380)	1.3 (72)	1.6 (93)
1 parent +	3.4 (196)	3.8 (201)	0.7 (37)	1.1 (62)

Note. The plus sign indicates that the household included one or more adult(s) in addition to the parent(s).

Table 2

Parents and adolescents reporting that there is a gun in the home, by household composition and respondent gender, 5,704 co-residing parent-adolescent pairs

	Respondent gender ¹							
	<u>F</u> %	<u>F</u> %	<u>F</u> %	<u>M</u> %	<u>M</u> %	<u>F</u> %	<u>M</u> %	<u>M</u> %
<u>Any gun (%)</u>								
Marital								
2 parents	27.7	28.5	27.3	31.2	33.2	27.0	36.4	32.2
2 parents +	24.6	25.2	23.7	28.4	34.4	28.3	32.7	33.5
Nonmarital								
1 parent	11.6	15.2	7.1	14.2	31.9	34.7	35.5	41.9
1 parent +	9.2	18.9	11.6	18.1	24.3	29.7	25.8	32.3
<u>Handgun (%)</u>								
Marital								
2 parents	16.2	13.4	14.0	16.7	20.7	12.2	23.2	18.0
2 parents +	11.7	8.8	11.8	15.2	22.5	9.4	17.7	15.8
Nonmarital								
1 parent	6.3	7.4	4.0	7.9	22.2	26.4	22.6	20.4
1 parent +	6.1	5.6	6.1	8.4	18.9	21.6	21.0	21.0

Note. Refusals and “don’t know” responses were rare (i.e., < 0.5%) with a few exceptions; for example, 3.1% of men refused to answer whether there was any gun in the home, and 2.5% of girls said that they did not know whether there was a gun in the home.

Note. The plus sign indicates that the household included one or more adult(s) in addition to the parent(s).

¹F = female M = male The adult respondent is listed first.

Table 3

Paired-comparison of responses about guns in the home, co-residing parent-adolescent pairs

	Respondent gender ¹			
	FF % (n)	FM % (n)	MF % (n)	MM % (n)
<u>Any gun in the home²</u>				
N=5,589				
Parent and adolescent agree (86.7%; n=4,843)				
Marital, 2 parents (565)	85.9 (728)	86.6 (743)	85.7 (540)	87.9
Marital, 2 parents + (220)	88.4 (298)	87.3 (254)	83.6 (199)	85.6
Nonmarital, 1 parent (76)	87.5 (391)	88.1 (333)	84.3 (59)	83.5
Nonmarital, 1 parent + (51)	87.1 (168)	87.2 (184)	89.2 (33)	86.4
Parent says yes, adolescent says no (6.4%; n=359)				
Marital, 2 parents	6.7 (57)	5.0 (43)	10.8 (68)	8.7 (56)
Marital, 2 parents +	5.9 (20)	4.5 (13)	11.8 (28)	7.8 (20)
Nonmarital, 1 parent	4.5 (20)	2.4 (9)	5.7 (4)	5.5 (5)
Nonmarital, 1 parent +	2.1 (4)	3.8 (8)	2.7 (1)	5.1 (3)
Parent says no, adolescent says yes (6.9%; n=387)				
Marital, 2 parents	7.4 (63)	8.4 (72)	3.5 (22)	3.4 (22)
Marital, 2 parents +	5.6 (19)	8.3 (24)	4.6 (11)	6.6 (17)
Nonmarital, 1 parent (10)	8.1 (36)	9.5 (36)	10.0 (7)	11.0
Nonmarital, 1 parent +	10.9 (21)	9.0 (19)	8.1 (3)	8.5 (5)
<u>Among households with a firearm, reports of handgun(s) in the home³</u>				
N=1,880				
Parent and adolescent agree (66.8%; n=1,256)				
Marital, 2 parents (191)	64.8 (196)	68.7 (215)	62.1 (149)	71.3
Marital, 2 parents + (84)	73.6 (78)	67.0 (65)	62.9 (61)	76.4
Nonmarital, 1 parent (36)	64.4 (56)	54.0 (34)	58.6 (17)	81.8
Nonmarital, 1 parent +	63.4 (26)	55.3 (26)	58.3 (7)	65.2 (15)
Parent says yes, adolescent says no (19.1%; n=359)				
Marital, 2 parents (54)	21.5 (65)	12.1 (38)	30.0 (72)	20.2
Marital, 2 parents +	17.9 (19)	11.3 (11)	35.1 (34)	13.6

(15)				
Nonmarital, 1 parent	14.9 (13)	11.1 (7)	13.8 (4)	11.4 (5)
Nonmarital, 1 parent +	19.5 (8)	17.0 (8)	16.7 (2)	17.4 (4)
Parents says no, adolescent says yes (14.1%; n=265)				
Marital, 2 parents	13.9 (42)	19.2 (60)	7.9 (19)	8.6 (23)
Marital, 2 parents +	8.5 (9)	21.7 (21)	2.1 (2)	10.0
(11)				
Nonmarital, 1 parent	20.7 (18)	34.9 (22)	27.6 (8)	6.8 (3)
Nonmarital, 1 parent +	17.1 (7)	27.7 (13)	25.0 (3)	17.4 (4)

Note. The plus sign indicates that the household included one or more adult(s) in addition to the parent(s).

¹F = female M = male. The gender of the adult is listed first.

²Refusals (n = 102 for adults, 33 for adolescents) were deleted from the analysis. “Don’t know” responses (n = 18 for adults, n = 118 for adolescents) were classified as “no.”

³The analysis is based on data from respondents who indicated that there was a firearm in the home; if either the adult or the adolescent reported that there was a firearm in the home, the pair was included in the analysis of the handgun question. Refusals (n = 7 for adults, n = 4 for adolescents) were deleted from the analysis; “don’t know” responses (n=16 for adults, n=188 for adolescents) were classified as “no.”

Table 4

Paired-comparison of disagreement about guns in the home, co-residing parent-adolescent pairs

	Respondent gender ¹			
	FF % (n)	FM % (n)	MF % (n)	MM % (n)
<u>Any gun in the home</u>				
If parent says yes (n=1,464), the percentage of time the adolescent says no (21.0%)				
Marital, 2 parents (47)	19.7 (47)	16.5 (39)	27.0 (58)	19.3
Marital, 2 parents + (16)	19.1 (16)	17.1 (12)	29.8 (25)	18.0
Nonmarital, 1 parent	34.6 (18)	29.6 (8)	13.0 (3)	15.2 (5)
Nonmarital, 1 parent +	16.7 (3)	32.0 (8)	0.0 (0)	12.5 (2)
If adolescent says yes (n=1,530), the percentage of time the parent says no (24.8%)				
Marital, 2 parents (22)	25.2 (62)	25.1 (68)	12.6 (22)	10.2
Marital, 2 parents + (17)	22.1 (19)	27.4 (23)	15.9 (11)	18.7
Nonmarital, 1 parent (10)	52.9 (36)	64.8 (35)	28.0 (7)	25.6
Nonmarital, 1 parent +	56.8 (21)	48.7 (19)	27.3 (3)	25.0 (5)
<u>Handgun in the home</u>				
If parent says yes (n=854), the percentage of time the adolescent says no (30.4%)				
Marital, 2 parents (29)	31.4 (44)	22.1 (27)	36.6 (29)	29.7
Marital, 2 parents + (10)	25.0 (10)	25.7 (9)	47.3 (26)	20.8
Nonmarital, 1 parent	39.3 (11)	40.0 (6)	25.0 (4)	19.1 (4)
Nonmarital, 1 parent +	25.0 (3)	46.2 (6)	28.6. (2)	23.1 (3)
If adolescent says yes (N=752), the percentage of time the parent says no (34.0%)				
Marital, 2 parents (23)	35.3 (41)	37.9 (55)	24.1 (19)	19.2
Marital, 2 parents + (10)	30.0 (9)	42.2 (19)	8.7 (2)	23.3
Nonmarital, 1 parent	54.6 (18)	73.3 (22)	42.1 (8)	15.8 (3)
Nonmarital, 1 parent +	63.6 (7)	72.2 (13)	37.5 (3)	30.8 (4)

Note. The plus sign indicates that the household included one or more adult(s) in addition to the parent(s).

¹F = female M = male. The gender of the adult is listed first.

Table 5

Regression coefficients predicting agreement and disagreement about whether there is a gun in the home, co-residing adult-adolescent pairs

	<u>Any gun</u>			<u>Handgun</u>		
	Agree beta	Parent yes, adolescent no beta	Parent no, adolescent yes beta	Agree beta	Parent yes, adolescent no beta	Parent no, adolescent yes beta
Household composition (vs. marital, 2 parents)						
Marital, 2 parents +	.0001	-.0016	.0005	.0366***	-.0005	.0062
Nonmarital, 1 parent	.0046***	-.0277***	.0219***	-.0105**	-.0690***	.1254***
Nonmarital, 1 parent +	.0050***	-.0289***	.0274***	-.0633***	-.0059	.0814***
Respondent gender						
Mother (vs. father)	.0082***	-.0391***	.0225***	-.0152***	-.0833***	.0711***
Girl (vs. boy)	-.0074***	.0201***	-.0098***	-.0481***	.1005***	-.0535***
Constant	.8639***	.0874***	.0560***	.7007***	.2038***	.1170***
F	311.38	1013.24	150.63	157.18	379.46	152.28
Prob. > F	.0000	.0000	.0000	.0000	.0000	.0000
Adj R-squared	.2428	.9339	.6597	.3838	.8413	.7413
n	4842	359	387	1255	358	265

Note. The plus sign indicates that the household included one or more adult(s) in addition to the parent(s).

* $p < .05$, ** $p < .01$, *** $p < .000$