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Anticipating Early Fatality: Friends', Schoolmates' and Individual Perceptions of Fatality on Adolescent Risk Behaviors

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Abstract

Past research indicates that anticipating adverse outcomes, such as early death (fatalism), is associated positively with adolescents' likelihood of engaging in risky behaviors. Health researchers and criminologists have argued that fatalism influences present risk taking in part by informing individuals' motivation for delaying gratification for the promise of future benefits. While past findings highlight the association between the anticipation of early death and a number of developmental outcomes, no known research has assessed the impact of location in a context characterized by high perceptions of fatality. Using data from Add Health and a sample of 9,584 adolescents (51 % female and 71 % white) nested in 113 schools, our study builds upon prior research by examining the association between friends', school mates', and individual perceptions of early fatality and adolescent risk behaviors. We test whether friends' anticipation of being killed prior to age 21 or location in a school where a high proportion of the student body subscribes to attitudes of high fatality, is associated with risky behaviors. Results indicate that friends' fatalism is positively associated with engaging in violent delinquency, non-violent delinquency, and drug use after controlling for individual covariates and prior individual risk-taking. Although friends' delinquency accounts for much of the effect of friends' fatalism on violence, none of the potential intervening variables fully explain the effect of friends' fatalism on youth involvement in nonviolent delinquency and drug use. Our results underscore the importance of friendship contextual effects in shaping adolescent risk-taking behavior and the very serious consequences perceptions of fatality have for adolescents' involvement in delinquency and drug use.

Keywords

Fatalism; Friendship; Adolescent risky behavior

Introduction

Adolescence is a key developmental period in the life course where behavioral patterns begin to establish trajectories of health and well-being (Furstenberg 2000). Recent interest in the health of adolescents in the United States has resulted in research and policy interventions focusing on the social contexts in which adolescents learn about healthy and risky behaviors and choices. As recently as 30 years ago, most cases of adolescent mortality were attributed to natural causes such as disease or illness. Today, the majority of cases of adolescent mortality are connected to either location in unhealthy environments or preventable individual behavior that often results from decisions made in adolescence (e.g., motor vehicle accidents, consequences of sexual behavior, substance use, suicide, homicide) (Harris et al. 2002). To reduce adolescent mortality, it is critical to identify factors that influence youths' decisions to engage in risky behavior.

It is often assumed that the reason most adolescents engage in risky behavior is that they perceive that they are impervious to the negative consequences of risk-taking, such as fatality or serious injury. This has been labeled the "personal fable" by Elkind (1967) or the myth of personal invincibility. In contrast to this expectation, however, research finds that adolescents report relatively accurate estimates of teens' probability for experiencing pregnancy, parenthood, and violent victimization in the future (Fischhoff et al. 2000; Parker and Fischhoff 2005). More seriously damaging to this myth of invincibility is the finding that most youth greatly *overestimate* their risk for dying in the near future. In a study of 15–16 year olds in 2000, teens estimated their probability of death from any cause to be about 19 % within the following year and 20 % by the end of their second decade of life (Fischhoff et al. 2000). Research with data from the National Longitudinal Study of Adolescent Health finds that one in seven youth report that they were at risk of premature death (Borowsky et al. 2009).

How accurate are adolescents' perceptions of early fatality? Mortality statistics indicate, in contrast to adolescent perceptions, that only 0.4 % of youth die before the age of 20 (Miniño et al. 2007). In addition, while there are racial and gender differences in the likelihood of early death, the average likelihood of dying before age 20 for black males— the group with the highest rates of early mortality—is only 0.5 % (Miniño et al. 2007). These figures suggest that perhaps it is youths' *perceptions of fatality*, rather than their *perception of invincibility*, that account for variation in risky behavior throughout this time period.

Driven in part by finding elevated levels of adolescent perceptions of fatality, research has linked individuals' perceptions of future life expectations to involvement in numerous risk behaviors (see Borowsky et al. 2009). While this research has been pivotal in drawing attention to the behavioral and health consequences of individuals' perceptions of fatality, much less is known about how enmeshment in social contexts characterized by high levels of perceived fatality, such as friendship networks or school environments, influences

adolescent outcomes. This is an important omission since a growing body of research suggests that anticipations of mortality vary across social groups and that norms and behaviors prevalent in social contexts shape individual outcomes (Borowsky et al. 2009; Swisher and Warner 2013). Examining variation in individuals' embeddedness within fatalistic friendship groups may enable a better understanding of why fatalistic attitudes play such an important role in adolescents' decisions to engage in risky behavior. For instance, finding that friends' perceptions of fatality affect adolescents' involvement in risky behavior will suggest that policy aimed at improving future perceptions should focus on the friendship group as the main conduit of influence. To aid in this understanding, the current study will examine whether friends' and schoolmates' perceptions of fatality are associated with a range of adolescent risk behaviors (violence, non-violent delinquency, drug use), and evaluate several mechanisms that may help explain the effect of friends' fatalistic attitudes on adolescent risk behaviors. Data from the National Longitudinal Study of Adolescent Health (hereafter Add Health), which is a nationally-representative and longitudinal study specifically designed to examine adolescent development in context, are used to address these questions. These data—which include rich information on adolescents' friendship networks and school contexts— provide a unique opportunity to assess the importance of fatalism within schools and friendship groups for adolescent risk-taking.

Future Perceptions and Risk Behaviors

Why would high levels of fatalism lead to participation in risky behavior among youth? A developmental task of adolescence is to form a coherent identity that integrates past, present and future selves (Erikson 1964, 1968). As part of this identity formation, youth are faced with a range of decisions that entail the consideration of education, occupation, and social relationships and how present-day behaviors may affect desired future outcomes. These decisions, in turn, are influenced by the youth's time perspective, or their ability to delay gratification for future outcomes (McCabe and Barnett 2000). This projection of self-identity to the future is foundational for the development of a sense of hope regarding future opportunities (Mair et al. 2012). Theoretical models of health and risk behaviors suggest that adolescents' beliefs about the consequences of personal action and perceived vulnerability to these consequences play an important role in motivating behavior (Duke et al. 2009). For instance, based on their future orientation, adolescents may direct their behavior in certain ways, either avoiding or embracing risky behavior (Nurmi 1993). Adolescents with more optimistic views of the future tend to be more sensitive to future consequences of their present behavior and, as a result, are less likely to engage in behavior that may jeopardize that future (Routledge and Arndt 2005). In contrast, adolescents who anticipate early death may be more likely to discount both potential future consequences of risk-taking and the benefits of delaying immediate gratification. As a result, these adolescents are more likely to engage in risky behaviors.

Rational choice theory expands on this idea of future orientation to help elaborate on how the anticipation of early death influences decisions to engage in risk taking (Caldwell et al. 2006; Gardner 1993; Wilson and Daly 1997). Adolescents who believe that life is predictable and who can foresee a future of opportunity are expected to have a lower likelihood of engaging in risky behavior since they can orient themselves to the future and

consider the risks of engaging in behavior that might jeopardize that future (Hill et al. 1997). In contrast, adolescents who view the future as uncertain or unpredictable or lack confidence in their survival, are expected to be less concerned about jeopardizing future outcomes and may develop a "here and now" attitude that facilitates risky behavior. In this sense, delaying present gratification for future rewards makes little sense to those with low expectations of surviving to young adulthood (Brezina et al. 2009; Caldwell et al. 2006). As Caldwell and colleagues (Caldwell et al. 2006) argued, "an adolescent facing an uncertain future—bleak career prospects, the real possibility of early death—has little reason to delay gratification, to incur present costs for future benefits. Thus, delinquency and poor school adjustment may be reasonable reactions to the perception the future holds little opportunity for conventional success" (pp. 591–592; see also Hill et al. 1997; Wilson and Daly 1997).

Recent studies provide robust evidence linking individual perceptions of fatality to risky behavior, including violent delinquency (Brezina et al. 2009; Caldwell et al. 2006), violent victimization, unsafe sexual activity, police arrest, and a HIV/AIDs diagnosis (Borowsky et al. 2009). Moreover, research by Duke et al. (2011) indicates that adolescent fatality has lasting effects stretching into young adulthood. Indeed, anticipation of early death emerges as a theme in several ethnographic studies of criminal offenders (Anderson 1994, 1999; Topali and Wright 2004; Hoffman 2004). For instance, Anderson's (1994, 1999) work on adolescents living in disadvantaged African-American neighborhoods finds that these youth were willing to risk injury or death in pursuit of immediate rewards including, most notably, respect from friends. Anderson explains that these youth experience great uncertainty regarding how long they will live and believe they could experience a violent death at any time. As a result, they accept their fate and "live on the edge" (Anderson 1999: 94). Lacking hope for the future, these adolescents adopt a time orientation in which short-term rewards are weighted much more heavily than the long-term benefits that might be gained from investments in conventional activities. In addition to Anderson's work, other ethnographies including Topalli and Wright's (2004) study of carjackers, Hoffman's (2004) study of inner city offenders, and Durant and colleagues' (DuRant et al. 1994) study of adolescents living in or around public housing projects, have connected a perception of fatality to youths' involvement in crime/delinquency. Although suggestive, these qualitative studies were not designed to specifically examine the relationship between anticipated early fatality and risky behavior.

A study by Brezina et al. (2009), however, was designed to examine specifically the link between adolescent perception of early fatality and violence. The ethnographic portion of their study focused on active adolescent offenders in Atlanta and revealed two important themes that emerged through interviews with adolescents: (1) the intensity of a fatalistic view and a corresponding lack of concern for the future and (2) rationalization of criminal/ deviant behavior coming from a cynical standpoint. These themes are summarized in the following quote provided by a respondent: "Ain't no point in being scared because you cannot know [what] you gonna die from. So, I can just, you know, not think about danger and shit. If I see something I want I take it right then because that might be your only chance in this world to get some" (Brezina et al. 2009: 1118). In sum, there is considerable evidence linking a fatalistic attitude to involvement in risky behavior.

Friends' Fatalism and Risky Behavior

Beliefs concerning the future do not emerge in a vacuum. Rather, they are learned through interactions with other people, especially those with whom they are closely tied (Kandel and Lesser 1969). As a result, adolescents' friends' perceptions of fatality are likely to be associated with their own risky behavior. There are a number of reasons to expect friends' fatalism to be linked to youths' involvement in risky behavior. Drawing on social learning theories and processes, a social influence perspective emphasizes that individuals have a strong tendency to conform to the behavior and attitudes of those they spend time with (Sutherland and Cressey 1955; Akers 1985). Normative influence or socialization from close associates is the key process by which individuals come to conform to the norms of the group. Therefore, friends' fatalism may influence adolescents' own attitudes such that their attitudes become similar to those of their friends. If a youth's friends believe that they have little to live for and their future is uncertain, this is likely to influence the youth's own sense of fatality. Rather than directly affecting youths' participation in risky behaviors, an influence perspective suggests that friends' fatalism is linked to a respondent's fatalism, which then explains their participation in risky behavior. If this is true, then friends' fatalism will be explained by taking into account a respondent's own perception of fatalism.

Another way that friends' fatalism may be connected to risky behaviors is through an opportunity mechanism. Opportunity theories including those by Hawley (1950), Cohen and Felson (1979) and Osgood et al. (1996) highlight the way in which the spatial and temporal patterning of everyday activities determines opportunities for crime. In particular, Osgood et al. (1996) propose that situations conducive to deviance are especially prevalent during unstructured socializing with friends in the absence of authority figures. Therefore, individuals who spend more time in unstructured socializing activities with peers will also more frequently engage in delinquency and other risky behaviors. For our study, this perspective suggests that friends with fatalistic attitudes are more likely to engage in risky behaviors. As a result of associating with these friends, individuals have increased opportunities to engage in similar risky behavior. Therefore, if the reason that friends' sense of fatalism matters is because fatalistic friends provide opportunities to engage in risky behavior, then we might expect friends' delinquency to account for the association between friends' fatalism and adolescents' risky behaviors.

Alternatively, friends' fatalism might be linked to individuals' risk behaviors through psychological mechanisms and cognitive processes. Associating with friends with high fatalism may shape respondents' psychological wellbeing through depressive symptoms ("little to live for") or through impulsivity or low self-control ("little reason to orient oneself to the future"), which have been linked to participation in risky behavior (Aronen and Soininen 2000; Beyers and Loeber 2003; Pratt and Cullen 2000; Wright et al. 1999). There is some evidence for these links as research finds that depressed individuals often report that they have trouble regulating their cognition and behavior (Dopheide 2006) and discounting the future is a key component of an impulsive behavioral trait that characterizes individuals with low self-control (Gottfredson and Hirschi 1990). These processes are often interrelated as depressed individuals score higher on scales of impulsivity and low self-control (Kaslow et al. 1988; Cataldo et al. 2005). Therefore, this perspective suggests that the effect of

friends' fatalism on individual's participation in risky behaviors may be explained by respondent's experience of depressive symptoms or low self-control.

Fatalistic friends also may affect present risk taking through "thoughtfully reflective decision making" (TRDM) (Paternoster and Pogarsky 2009). TRDM is comprised of four key components, namely: "(1) collecting information pertaining to a problem that requires a decision, (2) thinking of alternative solutions to the problem, (3) systematically deliberating over how to determine which alternative might be best, and (4) retrospectively analyzing how good a problem solver one was in the situation" (Paternoster and Pogarsky 2009: 121). Those lacking in TRDM are thought to make poor decisions and engage in delinquency, substance use, and other activities that jeopardize successful life outcomes. Importantly, Paternoster and Pogarsky (2009) argue that this cognitive trait varies across individuals and is in part a function of social structural characteristics. Fatalistic friends in particular may impact risk-taking by influencing adolescents' decision-making processes. Those who are attached to fatalistic friends may be less inclined to fully consider the implications that present action may have on future outcomes. Accordingly, the effect of friends' fatalism on risky behaviors may be explained by respondent's thoughtfully reflective decision making.

Finally, friends' fatalism may have a direct effect on individual risky behavior even after accounting for these potential intervening mechanisms. This potential effect suggests that enmeshment in a very fatalistic friendship group may make risky behavior more likely, regardless of the individual's own fatalistic attitudes, association with delinquent friends, depression, low self-control or reflective decision making. Figure 1 summarizes these relationships and the mechanisms that may explain any effect of friends' fatalism on adolescent risk behavior.

School Fatalism and Risky Behavior

Perceptions of future orientation are also likely to develop in institutions where normative expectations and knowledge provide a basis for an individual's own future-oriented interests (Chen and Vazsonyi 2013). This is because individuals draw cues from their wider surroundings regarding their futures as hopeful or hopeless. For instance, recent work has begun to examine attitudes that predominate in neighborhoods such as the degree of "hopelessness" characterizing particular neighborhoods (Mair et al. 2012). Hopeless neighborhoods are those whose neighbors report having little hope regarding future opportunities or improvements occurring in their neighborhood. Living in a neighborhood characterized by a climate of hopelessness may erode individual residents' own optimism and foster their own hopelessness in regard to the future (Swisher and Warner 2013). Similar to work on neighborhood climate, we propose that schools may vary in terms of a climate of perceived early fatality.

The school context is particularly important for adolescent development, as well as serving as an important arena for the development of risky behavior (Brookmeyer et al. 2006). In part, this is because adolescents spend much time in school and youths' social contacts tend to be concentrated in school (Feld 1981; Harris et al. 2002). Schools also provide normative structuring of behavior and shape aspirations for the future (Chen and Vazsonyi 2013; Khattab 2005). If a school is comprised of a large proportion of students with elevated levels

of perceived fatality, then it is possible that the school climate will attach less to lose by engaging in risky behavior. For instance, Harris et al. (2002) used Add Health data to construct a measure of school fatalism, which captured the average expectation of living past the age of 35 among students in a school and measured its association with a number of risk behaviors. The authors found a positive association between school fatalism and early sexual inter-course (among both boys and girls) and weapon use (among boys). While the association between school fatalism and early sexual onset became non-significant after introducing school and individual control variables, its association with boys' weapon use remained in multivariate models. This suggests that school fatalism may be associated with individual risk behaviors net of individual and friends' fatalism.

The Current Investigation

The purpose of this study is to expand upon recent research linking perceptions of fatality to risky behavior. We do so by arguing that enmeshment in social contexts characterized by high levels of fatality, such as friendship networks and schools, will be associated with involvement in risky behavior. We argue that individuals draw cues from their wider surroundings regarding their futures as hopeful or hopeless. Because most adolescents spend the majority of their time in school and hold their friends in especially high regard during this stage of the life-course, we hypothesize that friends' perceptions of fatality as well as the overall level of perceived fatality in an adolescent's school will be associated with individual involvement in risky behavior. In addition, we consider whether respondent's own perception of fatality, association with delinquent friends, depression symptoms, low self-control, or reflective decision making mediate the association between friends' fatalism and risky behavior.

Methods

Sample

Our study uses data from Add Health to test hypotheses related to the association between fatalistic outlooks and risk behaviors. Add Health is a nationally representative longitudinal study that examines the etiology of health-related behaviors and outcomes throughout adolescence and into young adulthood. All respondents were nested within randomly selected high schools and feeder schools in the United States in 1994 (respondents ranged from 7th to 12th graders). Researchers compiled a random sample of 80 high schools that was stratified by region, urbanicity, school type (i.e., public/private), ethnic makeup, and population size. The largest feeder school for each high school was also recruited when available, which resulted in a sample of more than 130 schools (Resnick et al. 1997).

All respondents in our analysis completed an initial In-School questionnaire between September 1994 and April 1995 and two subsequent In-Home interviews in 1995 and 1996. We exclude schools in which less than 50 % of the student body completed the In-School questionnaire as they would yield unreliable measures of friends' fatalism. We also dropped 13 schools that did not include respondents in the first two waves of the In-Home survey. Finally, we dropped respondents who had missing data on any one of the three dependent variables (violent delinquency, nonviolent delinquency, and drug use). Our final sample

consists of 9,584 respondents nested in 113 schools. A comparison of our restricted sample to a full sample that includes all respondents who completed the wave 2 interview revealed no notable differences in the independent and dependent measures used in this analysis, although our sample is slightly younger and has a larger proportion of white respondents compared to the complete sample.

Measures

Outcome Variables—Dependent variables were measured during the Wave 2 In-Home interview, which was administered approximately a year after the Wave 1 In-Home interview. We test our hypotheses using multi-level item response theory (IRT) models. Specifically, we employ 3-level Rasch models, with scale items nested in individuals, who are nested in schools (see Raudenbush et al. 2003). Our multilevel Rasch models aggregate item responses into an individual-level interval scale and allow for the examination of covariate effects at the individual and school levels. Importantly, these models take into account varying severity of scale items (e.g., getting into a fist fight vs. shooting someone) when measuring latent risk-taking. More information regarding our scaling techniques is provided in the in the Analytic Strategy section.

Violent Delinquency: This measure includes 7 items that indicate whether the respondent (1) took part in a serious physical fight, (2) seriously injured someone, (3) took part in a group fight, (4) used or threatened someone with a weapon to rob, (5) pulled a knife or gun on someone, (6) used a weapon in a fight, or (7) shot or stabbed someone within the 12 months prior to the Wave 2 interview (alpha = .779). Each of the seven items were coded such that 0 = no involvement in the violent act and 1 = some involvement in the violent act.

Non-violent Delinquency: This measure consists of 8 items indicating whether the respondent (1) shoplifted, (2) stole something worth less than $50, (3) stole something worth more than $50, (4) painted graffiti, (5) deliberately damaged someone else's property, (6) drove someone's car without the owner's permission, (7) burglarized a building, or (8) sold drugs in the 12 months prior to the Wave 2 interview (alpha = .757). These eight items are coded such that 0 = no involvement in the delinquent act and 1 = some involvement in the delinquent act.

Drug Use: Respondent drug use is comprised of 4 items indicating whether the respondent used (1) marijuana, (2) cocaine, (3) inhalants, or (4) other drugs at any time since the Wave 2 Interview (alpha = .631). Again, each of the four items were coded such that 0 = no use of the substance to 1 = some use of the substance.

Individual-Level Covariates

Respondent, Friends' and School Fatalism Respondent Fatalism: Fatalism was measured during the in-school survey based on responses to the following question: "On a scale from 'no chance' to 'it will happen,' what do you think are the chances you will be killed by age 21?" Initial responses ranged from 0 to 8, with higher values indicating greater anticipation of being killed by age 21. For this study, we collapsed responses into two categories, with 0 indicating that the respondent perceived that they have no chance (0) to

less than 50-50 chance (3), and 1 indicating about 50-50 chance (4) to it will happen (8). This coding scheme is consistent with prior research that used Add Health to examine the effect of perceptions of early fatality on risk taking and other outcomes (Brezina et al. 2009).

Friends' Fatalism: As part of the In-School survey, respondents nominated up to 10 of their closest (5 each of male and female) friends from a roster that included all students in the school, as well as students from feeder/sister schools. We use data from these nominations to construct a direct measure of *friends' fatalism*. Specifically, we use nominations from the send and receive network, meaning that a respondent's friendship network consists of those whom the respondent nominated, as well as those who nominated the respondent. Although respondents could nominate friends who did not attend their school, these out-of-school nominations could not be used in the construction of network measures which required participation in the in-school survey. *Friends' fatalism* is measured as the proportion of friends in the send and receive network who anticipate a 50 % or greater chance of being killed by age 21. This resulting measure is continuous, ranging from "0," indicating that none of the respondent's friends anticipate being killed by age 21, to "1," indicating that every one of the respondents' friends anticipate a 50 % or greater chance of being killed by age 21. We recoded friends' fatalism to 0 for *isolates*, or respondents having no sent or received nominations and include a binary variable indicating isolate status in our models.

School-Level Fatalism: This measure represents the proportion of students in the school who have a high anticipation (50-50 chance or greater) of being killed by age 21. Because each student was surveyed, it is possible to count the number of students in a school who believed that they had a greater than 50 % chance of dying before the age of 21. As with friends' fatalism, school-level fatalism represents the proportion of students within the respondent's school who anticipate a 50 % or greater chance of being killed by age 21. This measure is continuous, and potentially ranges from "0," indicating that none of the school's students anticipate being killed by age 21, to "1," indicating that every student anticipates a 50 % or greater chance of being killed by age 21.

Potential Mediating Variables: We include a number of variables that may account for the association between friends' fatalism and risk-taking.

Friends' Delinquency: To construct our measure of friends' delinquency, we first constructed an individual-level measure of delinquency, which consisted of 8 items measured during the in-school survey. The items indicate whether the respondent (1) got into danger because of a dare, (2) lied to his/her parents, (3) skipped school, (4) smoked cigarettes, (5) drank alcohol, (6) got drunk, (7) raced on a bike or car, or (8) got into a physical fight in the past 12 months prior to the in-school survey (alpha = .699). To scale friends' delinquency we first took the mean of the eight standardized items for every respondent in the in-school sample. We then matched the resulting measure to each friend within each respondent's send and receive network, and calculated the mean level of delinquency across the network partners (see Haynie 2001). Because we are limited to friends within the respondent's school (or sister feeder school) this measure of friends'

delinquency does not include any information on out-of-school friends that the respondent may have nominated.

Depressive Symptoms: Following Perreira et al. (2005), our measure consists of five items adopted from the CES-D scale (Radloff 1977) that indicate prevalence of emotional and other mental health problems (e.g., "felt depressed," "felt sad") throughout the previous week (α = .802). Responses ranged from 0 ("never or rarely") to 3 ("all or most of the time"). Values presented are the means of the standardized items.

Low Self-control: Following Perrone and colleagues (Perrone et al. 2004), we measure *low self-control* with a 5-item scale that captures various dimensions of low self-control and impulsivity. The first three items assess whether respondents have trouble paying attention, difficulties finishing their homework, and problems with their teachers, during last school year. Responses to these items ranged from 1 ("never/rarely") to 5 ("every day"). A fourth item indicates how often respondents had trouble keeping their mind focused during the past week. Responses ranged from 0 ("never") to 3 ("everyday"). Perrone et al. argue that these four items capture simple tasks, physical activities, and impulsivity components of Gottfredson and Hirschi's conception of low self-control. A final item, which taps the self-centeredness component of self-control, measures how often during the past week respondents felt they do everything just right. Responses ranged from 0 ("never") to 3 ("everyday"). To measure low self-control, we take the mean of the standardized items (alpha = .658).

Thoughtfully Reflective Decision Making: We measure respondents' *thoughtfully reflective decision making* (TRDM) with a four-item measure proposed by Paternoster and Pogarsky (2009). The index includes responses to the following four statements: (1) "When you have a problem to solve, one of the first things you do is get as many facts about the problem as possible;" (2) "When you are attempting to find a solution to a problem, you usually try to think of as many different approaches to the problem as possible;" (3) "After carrying out a solution to a problem, you usually try to analyze what went right and what went wrong;" and (4) "When making decisions, you generally use a systematic method for judging and comparing alternatives." Responses ranged from 1 ("strongly agree") to 5 ("strongly disagree"). To scale TRDM, we first reverse-coded the items and calculated the mean of the standardized items so that higher values indicate greater levels of reflective decision making (alpha = .740).

Control Variables

Individual-Level Control Variables: We include a number of control variables to account for potential confounders, including *age* in years (which includes a linear and quadratic term), race/ethnicity [binary indicators for *black, Latino*, and *other race* (white as reference)], and family structure (1 = *single parent household*). We include two variables that capture socioeconomic status. First, *parental socioeconomic status* combines the standardized mean of parents' highest occupational status and education level. Second, we include a binary variable indicating whether the parents of the respondent received public assistance income at the time of the Wave 1 interview. Finally, we include Wave 1 controls

for the dependent variables, which are comprised of the same items that were measured during the wave 2 interviews. The scales represent the empirical Bayes residuals from 3-level Rasch models.

School-Level Control Variables: We also include a number of school-level control variables in our models. First, *school socioeconomic status* is the within-school mean of the individual-level socioeconomic status measure. We include binary variables that indicate whether the school is *urban* or *rural* (*suburban* as reference) and whether the school is *Catholic* or *private* (*public* as reference). We include a measure of *school size,* which is the number of students that were on the school roster at the time of the in-school interview. Finally, we include 3 binary variables that account for region, including *West, Midwest,* and *Northeast* (*South* as reference).

Plan of Analysis

We estimate a series of multilevel Rasch models in order to test the associations between friends' and school-level fatalism and violence, non-violent delinquency, and drug use. Our 3-level models are comprised of items at level 1, individuals at level 2, and schools at level 3 and accounts for the nesting of students within schools. As described in Raudenbush et al. (2003), we utilize an IRT (in our case, Rasch) scaling approach, which employs a mathematical model to construct a single individual-level "dimension," representing each respondent's latent level of violent delinquency, non-violent delinquency, or drug use. Following past research (e.g., Maimon and Browning 2010), we fit three-level logit models to estimate the effects of friends' and school-level fatalism on our dependent variables.

For all statistical models, the first level consists of the respective scale items, and may be expressed as:

$$\eta_{ijk} = \pi_{0jk} + \sum_{p=1}^{P-1} \pi_{pjk} a_{pijk}$$

where a_{pijk} is a binary variable taking on a value of 1 if response i refers to item p in the scale (and 0 if otherwise) and π_{pjk} is a coefficient reflecting the "difficulty" or "severity" of item p of the respective scale. Because we center each a around its grand mean, π_{0jk} represents the log-odds that respondent j in school k engaged in a "typical item" from the respective scale, or the respondent's adjusted latent level of violent delinquency, non-violent delinquency, or drug use. Finally, η_{ijk} is the log-odds that respondent j in school k engaged in the ith scale item.

We estimate the effects of friends' fatalism on individual risk-taking at level two. This expression of the level two model corresponds to the final models for each outcome, which are displayed in the fourth models in Tables 4 through 6. The level two model may be expressed as:

$$\pi_{0jk} = \beta_{00k} + \beta_{01k} Fr\_Fat_{jk} + \sum_{q=2}^{Q} \beta_{0qk} X_{qjk} + r_{0jk}$$

$$r_{0jk} \sim N\left(0, \sigma^2\right)$$

where β_{00k} is the intercept, or the adjusted mean of the outcome in school k, β_{01k} is the effect of friends' fatalism on the outcome and Fr_Fat_{jk} is level of fatalism among respondent j in school k's friends. Finally, β_{0qk} is the effect of covariate $q = 3,\ldots,Q$ on individual j's outcome, X_{qjk} is the value of individual-level covariate $q = 3,\ldots,Q$ for respondent j. Finally, r_{0jk} is an individual-level error term that is assumed to be independent and normally distributed, with a mean of 0 and variance σ^2.

Finally, we estimate the effect of school-level fatalism at level 3, which may be written as:

$$\beta_{00k} = \gamma_{000} + \gamma_{001} School\_Fat_k + \sum_{s=2}^{S} \gamma_{00s} W_{sk} + u_{00k}$$

$$u_{00k} \sim N\left(0, \tau\right)$$

where γ_{000} is the grand mean intercept, or the adjusted log odds of an affirmative response to a "typical item" in the outcome of interest, γ_{001} is the effect of school-level fatalism, $School\_Fat_k$ is the mean level of fatalism among students in school k, γ_{00s} is the effect of school-level covariate $s = 2,\ldots,S$ on the outcome, W_{sk} is the value of covariate $s = 2,\ldots,S$ in school k, and u_{00k} is a school-level error term assumed to be independent and normally distributed with a mean of 0 and variance τ.

As indicated earlier, we construct unconditional 3-level Rasch models to generate our Wave 1 controls for violent delinquency, non-violent delinquency, and drug use. These models only include grand-mean centered item indicators at level 1 that account for item severity in estimating the variable of interest and omit all school and individual-level covariates. The resulting scales represent the empirical Bayes residuals from level 2, which indicate the degree to which respondents' latent trait diverges from that of the school-mean (see Raudenbush and Bryk 2002).

Missing values on independent variables were multiply imputed using Stata's Imputation through Chained Equations (ICE) command (Royston 2005). Following von Hippel (2007), we created 10 imputed datasets from a dataset that included respondents with missing data on the dependent variable, and then dropped respondents with missing values on any one of the dependent variables in our final statistical models. We estimate hierarchical Rasch models with imputed datasets using HLM7's multiple imputation procedure. Individual- and school-level survey weights (constructed at Wave II) account for Add Health's complex survey design and are applied in all multivariate analyses (see Chantala 2006 for a description of proper weighting procedures for estimating multilevel models using Add Health data).

After running our multivariate Rasch models, we assess whether a subset of variables mediate the association between peer fatalism and the outcomes with a series of Sobel tests (Sobel 1982). These tests determine whether reductions in the associations between peer fatalism and the three outcomes following the inclusion of the mediating variable are significant. Unstandardized coefficients and robust standard errors for two-level hierarchical linear models were used to measure associations between peer fatalism and potential mediating variables (i.e., respondent fatalism, friends' delinquency, depression, low self-control, task preference, and reflective decision making). We run Sobel tests for mediating variables that, upon their introduction to the model, result in a reduction in the magnitude of the association between peer fatalism and the outcome of interest.

Results

Descriptive Findings

Descriptive results for all individual control variables are reported in Table 1. The average age of respondents in our sample is 15 and the sample is comprised of 49 % male respondents. In terms of race/ethnicity, 71 % of the sample identifies as being white, 16 % as Black, 8 % Latino, and 5 % note some other race/ethnic designation. Twenty-seven percent of the respondents' reside in single parent homes and 10 % of respondents report that their family receives public assistance. Of importance, 14 % of the respondents report that they anticipate having a 50 % or greater chance of dying before the age of 21 (high fatality). Turning to the school characteristics, Table 2 indicates that 57 % of the schools are located in suburban areas, 27 % in urban areas, and 16 % in rural areas. The sample also includes some private (4.4 %) and Catholic schools (4.4 %) with the remainder identified as public schools (91 %). While many schools are located in the Southern region of the U.S. (43 %), 17 % are in the West, 23 % in the Midwest, and 17 % in the Northeast regions. The average school has 830 students attending, although there is a wide range in school size (26 to 3,334). Descriptive characteristics for these measures are reported in Table 2.

Figure 2 presents the predicted probability of engaging in a "typical" risky behavior (scale item) for adolescents who have low versus high early fatalistic attitudes. These values are based on three Rasch models that measure the bivariate association between individual fatalism and violent delinquency, non-violent delinquency, and drug use. Consistent with past research, results indicate that perceptions of early death are strongly associated with risky behavior 12 months later. Those who score high on fatalism have a higher probability of engaging in violent (.057 vs. .031), non-violent delinquency (.067 vs. .049), and using illegal drugs (.082 vs. .049).

Table 3 continues to explore the differences between respondents who hold high fatalistic attitudes versus all others. This table displays the mean levels of the individual-level independent variables classified by high versus low levels of respondent fatalism. Surprisingly, there is little difference between respondents who score high or low on fatalism in regard to exposure to friends' fatalism (non-significant). However, there is considerable evidence that background characteristics are associated with level of fatalism. Older respondents, males, Black and Latino respondents are more likely to report high fatalism. In addition, respondents from single parent households, those with less educated

parents, and those whose parents receive public assistance are more likely to report high fatalism. Finally, there is evidence that respondents who hold high fatalism attitudes score higher on depressive symptoms and low self-control than respondents who have low perceptions of fatality. These descriptive results highlight the importance of controlling for these confounding effects when analyzing the association between fatalism and risky behavior.

Multivariate Findings

Turning to our multivariate results, our modeling strategy is as follows: Model 1 measures the association between risky behavior and friends' and school fatalism, controlling for all background individual, family, and school factors. Model 2, introduces respondent fatalism to determine the extent to which respondent fatalism accounts for the associations between friends' fatalism and risk behavior. Model 3 introduces friends' delinquency to determine whether associating with delinquent friends explains the association between friends' fatalism and risky behaviors. Finally, depressive symptoms, low self-control, and reflective decision making are added in Model 4, to assess whether psychological well-being and cognitive processes potentially explain the association between friends' fatalism and risky behavior. We repeat this model progression for violent, non-violent delinquency and drug use (results displayed in Tables 4, 5, 6, respectively). We then run Sobel tests that examine whether the inclusion of potential mediating variables results in significant reductions in the association between peer fatalism and the three markers of risk-taking. Across all models, individual and school variables are centered around their respective grand means.

Violent Delinquency—Results from models of violent delinquency are displayed in Table 4. As illustrated in model 1, friends' fatalism is positively associated with participation in violence, net of control variables ($b = .599$, $p < .05$). School-level fatalism is not associated with violent delinquency in our model. While not the focus of our study, it is reassuring to note that the association between the control variables and youth violence observed in our study are consistent with past research. Model 2 adds respondent's own perceptions of fatalism, which is not associated with violence. In addition, introducing respondent fatalism has little impact on the significant association between friends' fatalism and the outcome variables ($b = .591$, $p < .05$). This provides evidence that (1) friends' fatalism exerts a positive effect on violence regardless of the respondent's fatalistic orientation, and that respondents' fatalism does not mediate the association between peer fatalism and violence. Model 3 adds friends' delinquency to determine whether associating with delinquent friends explain the effect of friends' fatalism on violence as suggested by opportunity theory. Results provide some evidence of this as the effect of friends' fatalism is reduced to a marginally-significant level ($b = .429$, $p < .10$). Specifically, compared to model two, this model indicates that friends' delinquency explains approximately 27 % of the friends' fatalism effect ($.27 = ((.591–.429)/.591)$). Last, model 4 incorporates respondent depressive symptoms, low self-control, and reflective decision making. Results indicate that low self-control is positively and significantly associated with violence ($b = .336$, $p < .01$), while the association between reflective decision making and violence is negative and marginally-significant ($b = −.105$, $p < .10$). Depressive symptoms are not significantly associated with adolescent violence net of other variables. With the inclusion of these latter variables, the

coefficient for friends' fatalism is further reduced in size and is no longer associated with respondent involvement in violence (b = .401, p .10). In sum, results indicate that the effect of friends' fatalism on adolescent involvement in violence is largely attributable to the delinquency these friends engage in and potentially adolescent's own level of low self-control and reflective decision making. Accordingly, we formally test whether friends' delinquency, low self-control, and reflective decision making mediate the association between peer fatalism and violence with Sobel tests below.

Non-violent Delinquency—Table 5 displays the results from models predicting nonviolent delinquency. Similar to results for violence, model 1 indicates that friends' fatalism has a positive and significant association with non-violence delinquency (b = 0.850, p < .01). However contrary to our hypothesis, school fatalism is negatively and significantly associated with non-violent delinquency (b = −2.132, p < .01). As schools become more fatalistic, adolescents are less likely to engage in non-violent delinquency. In model 2, respondent's fatalism is introduced, which net of control variables, is not associated with non-violent delinquency. Model 3 introduces friends' delinquency and presents evidence that friends' delinquency explains a small portion of the friends' fatalism effect; however, friends' fatalism continues to be a robust predictor of non-violent delinquency at wave 2 (b = .721, p < .01). Introducing depressive symptoms, low self-control, and reflective decision making in model 4 does little to change the magnitude of the association between friends' fatalism and non-violent delinquency from model 3. As with violent delinquency, low self-control is positively associated with non-violent delinquency (b = .264, p < .001). These results suggest that friends' fatalism increases adolescent's involvement in non-violent delinquency and this association is not fully explained by incorporating measures of respondent's own fatalism, friends' delinquency, depression, low self-control or reflective decision-making. However, as introducing friends' non-violent delinquency reduced the magnitude of the association between peer fatalism and violence by roughly 15 %, we test whether there is evidence of a significant mediation effect using a Sobel test below.

Drug Use—Last, we present models of drug use in Table 6. Model 1 again shows that friends' fatalism has a strong positive association with respondent's later drug use (b = 1.107, p < .001), net of control variables. Similar to results for violence, school fatalism is not associated with drug use. Model 2 introduces respondent fatalism which is not significantly associated with drug use. In addition, introducing respondent fatalism does little to alter the association between friends' fatalism and adolescent drug use observed in model 1. Incorporating friends' delinquency in model 3 reduces the size of the friends' fatalism coefficient by roughly 31 % ((1.107–0.764)/1.107), although friends' fatalism continues to remain associated with drug use (b = .764, p < .01). Depressive symptoms, low self-control, and reflective decision making are added in model 4. Depressive symptoms (b = .181, p < .01) and low self-control (b = .441, p < .001) are positively associated with drug use; however, adding psychological characteristics and cognitive processes does little to alter the positive and significant association between friends' fatalism and drug use observed in the previous model. Overall, results examining drug use suggest that a modest portion of the effect of friends' fatalism is explained by respondent's association with delinquent peers. In the end though, friends' fatalism continues to have a significant positive association with

drug use, net of all other variables considered. Again, we test whether there is a significant mediational relationship between peer fatalism, peer delinquency, and drug use with a Sobel test below.

Sobel Testes of Mediation

We now present results from Sobel tests that assess whether variables of theoretical interest significantly mediate the association between peer fatalism and the outcomes. All tests are based on unstandardized coefficients and robust standard errors. Associations between peer fatalism and potential mediating variables are measured using two-level linear regression models with adolescents nested in schools. These models control for all individual- and school-level variables, including the three measures of prior risk-taking (i.e., prior violent delinquency, prior nonviolent delinquency, and prior drug use).

Violent Delinquency—Results presented in Table 4 suggest that friends' delinquency, low self-control, and reflective decision making mediate part of the association between friends' fatalism and violent delinquency. Of the three potential mediating variables, peer fatalism was only significantly associated with friends' delinquency ($b = .400$, $p < .001$). The null associations between friends' fatalism and both low self-control and reflective decision making suggest these measures do not mediate association between friends' fatalism and violent delinquency. Accordingly, we only present results from the Sobel test that examines whether friends' delinquency mediates the association between friends' fatalism and violent delinquency.

Results for the Sobel test examining the relationship between friends' fatalism, friends' delinquency, and violent delinquency are presented in Fig. 3. As the figure illustrates, (1) friends' fatalism is related to friends' delinquency ($b = .400$, s.e. .052, $p < .001$), (2) friends' delinquency is related to violent delinquency ($b = .423$, s.e. .106, $p < .001$), (3) friends' fatalism is related to violent delinquency ($b = .591$, s.e. .250, $p < .05$), and the magnitude of the association between friends' fatalism and violence is significantly reduced after introducing friends' delinquency ($b = .429$, s.e. .252, $p < .10$; Sobel $z = 3.54$, $p < .001$).

Non-violent Delinquency—Results presented in Table 5 suggest that friends' delinquency partially mediates the association between friends' fatalism and non-violent delinquency. As peer fatalism is significantly associated with friends' delinquency, we test whether friends' delinquency mediates the association between friends' fatalism and non-violent delinquency.

Results from the Sobel test examining the relationship between friends' fatalism, friends' delinquency, and non-violent delinquency are presented in Fig. 4. This figure illustrates (1) friends' fatalism is related to friends' delinquency ($b = .400$, s.e. .052, $p < .001$), (2) friends' delinquency is related to nonviolent delinquency ($b = .324$, s.e. .088, $p < .001$), (3) friends' fatalism is related to non-violent delinquency ($b = .850$, s.e. .269, $p < .01$), and the magnitude of the association between friends' fatalism and non-violent delinquency is significantly reduced after introducing friends' delinquency ($b = .721$, s.e. .271, $p < .01$; Sobel $z = 3.321$, $p < .039$).

Drug Use—Finally, results presented in Table 6 also suggest that friends' delinquency mediates part of the association between friends' fatalism and drug use. Again, as peer fatalism is significantly associated with friends' delinquency, we present results from a Sobel test that assesses whether friends' delinquency significantly mediates part of the association between friends' fatalism and drug use.

Results from the Sobel test examining the relationship between friends' fatalism, friends' delinquency, and drug use are presented in Fig. 5. As illustrated by the figure, (1) friends' fatalism is related to friends' delinquency ($b = .400$, s.e. .052, $p < .001$), (2) friends' delinquency is associated with drug use ($b = .845$, s.e. .125, $p < .001$), (3) friends' fatalism is associated with drug use ($b = 1.100$, s.e. .237, $p < .001$), and the magnitude of the association between friends' fatalism and drug use is significantly reduced after introducing friends' delinquency ($b = .764$, s.e. .238, $p < .01.$; Sobel $z = 5.077$, $p < .001$).

Together, results from the Sobel tests suggest friends' delinquency mediates much of the association between friends' fatalism and risk-taking. However, significant associations between friends' fatalism and non-violent delinquency and drug use remained after controlling for the potential mediating variables, suggesting that some portion of the effect of peer fatalism on these forms of risk taking are explained by other processes.

Discussion

In contrast to popular sentiment explaining adolescents' elevated participation in risky behaviors resulting from youths' perceived invincibility, our research continues to draw attention to youths' perceptions regarding their future life expectancies—what has been termed perceptions of fatality. It is these perceptions of fatality that help to explain youths' involvement in risky behavior. While a growing body of research has linked individual perceptions of fatality to numerous risky behaviors, prior research has yet to consider the contextual effects of being enmeshed in groups or institutions characterized by attitudes of early fatality. The purpose of this study was to extend prior work on perceptions of fatality to ask whether enmeshment in contexts characterized by high levels of fatality is predictive of risky behavior. In particular, we draw attention to the level of fatality present in the respondent's own friendship network and in the school he/she attended.

Four main results emerge from this study. First, friends' fatalism has a strong positive effect on risky behavior that for drug use and non-violent delinquency cannot be explained away by individual, family, or school characteristics. This suggests that there is something unique about being enmeshed in a friendship context characterized by high fatalistic attitudes. Perhaps in such a climate, friends' fatalistic attitudes reflect a bleak assessment of future opportunities or exposure to elevated levels of deviance that are not captured solely by respondent's own sense of fatalism. Even if adolescents themselves expect to have a long life, entanglement in a friendship network where friends hold bleak assessments of the future seem to directly increase risks of criminal activity. Spending time with these friends may make it easier to discount the consequences of behavior, especially if it is risky behavior that occurs within the friendship group. While it is beyond the scope of our data, it would be useful to know more about the situations in which law-breaking occurs. Are these

risky behaviors occurring with friends and what sort of role do friends play in encouraging participation in behavior that may conflict with an adolescent's own goals and hopes for the future?

Second, some portion of the friends' fatalism effect is attributed to associating with delinquent friends, which suggests some evidence of an opportunity mechanism. That is, part of the reason why friends' fatalism is associated with risky behaviors is that it exposes adolescents to friends' delinquency, which in turn is associated with risky behavior. This is supportive of Osgood et al. (1996) opportunity theory which posits that friends matter because they increase opportunity for adolescent friends to socialize together in unstructured settings. Being enmeshed in a friendship group where most or all of the friends hold fatalistic attitudes about the future likely increases future time discounting and group participation in delinquent activity. This is consistent with a rational choice framework and the development of a present orientation and a "little to lose" attitude. Associating with these friends is likely to increase adolescents' opportunity to participate in friends' delinquency.

Third, we find little evidence that the reason why friends' fatalism is associated with adolescent involvement in risky behavior is because friends' fatalistic attitudes influence and shape adolescent's own fatalistic attitudes. That is, incorporating respondent's own fatalistic attitudes has little effect on the magnitudes of the associations between friends' fatalism and our outcomes. This implies that prior findings of strong, positive associations between respondent fatalism and risky behavior may reflect having friends who also have high fatalistic attitudes. What remains unclear is whether respondents select friends who have similar attitudes about the future or whether friends socialize adolescents to have similar attitudes regarding life expectancy. While beyond the scope of this manuscript, the development of more sophisticated network analysis (e.g., SIENA) should allow researchers to begin to untangle the selection and influence component of the association between friends' fatalism and respondent's fatalism.

Finally, our findings indicate that school fatalism is not associated with violence or drug use. This result, while somewhat surprising, is consistent with research by Harris et al. (2002) that finds little evidence that school expectations regarding fatalism were associated with risky behaviors beyond the bivariate level. This finding is also consistent with other contextual research that finds school effects to often be indirect and quite modest (Duncan and Aber 1997). To our surprise, results indicate that school fatalism was associated negatively with non-violent delinquency. Exploring this further in supplementary analyses suggests that the negative effect only emerges after controlling for other school characteristics. Because school fatalism only emerges as a significant correlate in the non-delinquency models, we are hesitant to make more of this finding.

While our study emphasizes the importance of considering friends' fatalism when attempting to identify those adolescents most at risk of engaging in risky behavior, it is also important to understand the origins of anticipated early fatality. It is very probable that perceptions of fatalism, especially exposure to high levels of friends' fatalism, are linked to exposure to neighborhood violence. Adolescents whose friends all have high perceptions of early death are likely to share a similar environmental context, such as residence in disadvantaged

neighborhoods where exposure to violence is a routine feature of daily life (e.g., Anderson 1999). Perceptions of early death also may be linked to having known neighbors, family, or friends killed as a result of exposure to early violence. Finally, it is also likely that anticipated educational and economic opportunities may shape both respondent's perceptions of fatality as well as those fatalistic attitudes of friends to whom the adolescent is connected. Educational and economic opportunities are location-specific and likely to diffuse across a network of friends. Holding an attitude of little to live for as a result of anticipated educational or economic opportunities may shape early fatality attitudes. Future research should continue to explore the underpinnings of perceptions of fatality since they appear to shape so many later behavioral outcomes (Duke et al. 2011).

Limitations

Although our study contributes to the understanding of the mechanisms through which friends' fatalism influences adolescent risk taking, it is not without its limitations. First, the Add Health data are becoming dated, especially the first wave of data collection that took place in 1994 and 1995. Unfortunately, no subsequent study has included both the sophisticated sampling design and extensive school, friendship network, and individual measures of health and risky behaviors available in this data. While our theoretical approach specifies no reason why our results should be period specific, future research using more recently collected data could assess whether the association between friends' fatalism and adolescent risk taking remains the same today. Second, our data only include respondents who are in school. Thus, it remains unclear whether friends' fatalism impacts risk-taking of school drop-outs and other young people not in school in the same manner. Further, research that includes information on adolescents no longer attending school and/or young adults can test whether the results from our study stem from general processes or ones that are unique to respondents attending schools such as those in our study.

Conclusion and Implications

In spite of these limitations, our study is one of the first to show that friends' perceptions of fatality are linked to adolescent risky behavior, net of a host of individual, family, and school characteristics. This is further evidence that the friendship context is critical to consider and can have an impact on adolescents' behavior regardless of youths' own attitudes and beliefs. Not only is it important for adolescents themselves to perceive a hopeful future, but it is just as important to make sure that adolescents' friends also perceive a future of hope and opportunities. Planning for the future and delaying present gratification for future rewards makes little sense unless adolescents and their friends' perceive a long stable future to look forward to (Wiebe 2004).

Our results also highlight how important it is to design policies that will equip adolescents and their friends with the necessary skills and resources to meet the demands of their daily lives and to enable a belief in a brighter future. And because fatality attitudes do not appear to be a stable trait (see Borowsky et al. 2009) but rather can shift and change over time, it is plausible to design interventions that target at risk youth to provide increased resources and coping skills that can operate to increase future optimism. In addition, providing access to positive peers and adult role models who both foresee positive futures as well as live lives

that are filled with opportunities for prosocial achievements can help to facilitate a sense of optimism for the future. Adolescents are especially likely to perceive a more hopeful future if they can actually see their friends, school mates and neighbors living longer, more successful lives. Therefore, policies that increase life longevity and promote positive opportunities for the most at risk individuals in our society are likely to increase attitudes of hope among all individuals.

Finally, our research suggests that interventions may be most beneficial if they are targeted at groups of friends, rather than single individuals. Friendship networks continue to be a critical context in which adolescents make decisions about both their current and future behaviors. Therefore, targeting programs at friendship groups is likely to have a much larger impact on shaping attitudes and behaviors than would be selecting and working with individual adolescents. These types of interventions are likely to translate into increased hope and optimism among youth for the future.

Acknowledgments

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Biographies

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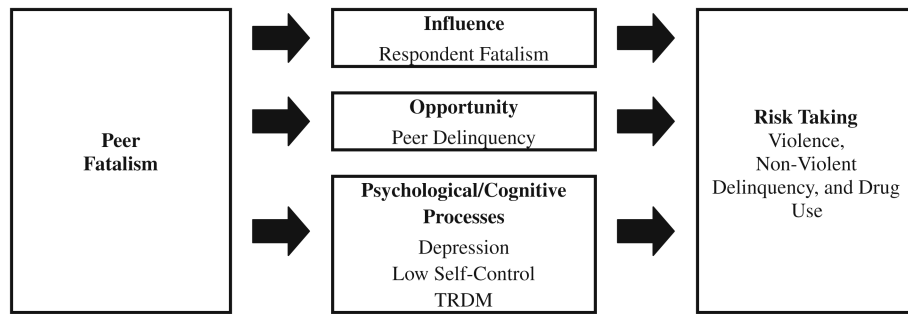
Fig. 1. Mechanisms that may account for the relationship between peer fatalism and risk taking
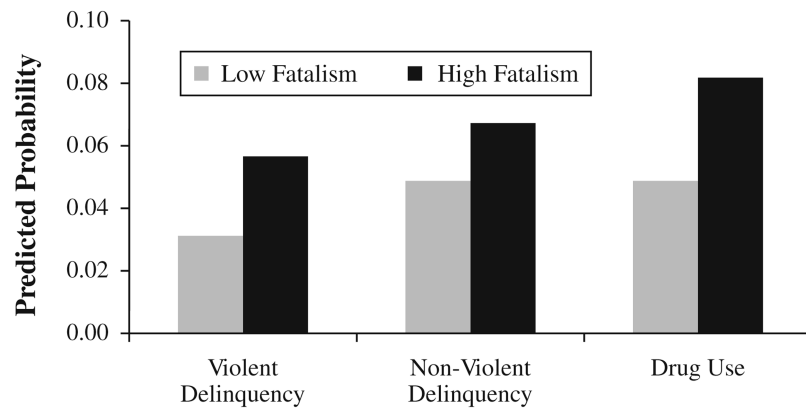
Fig. 2. Risky behavior by respondent's perception of early fatality
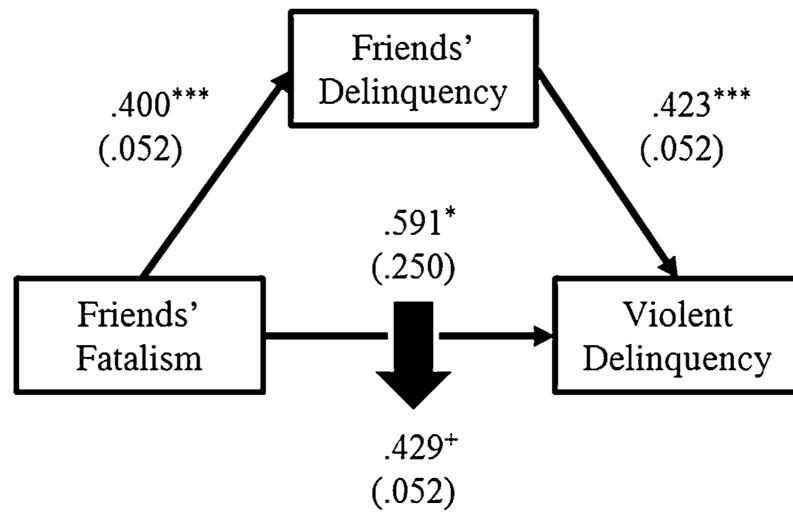
Fig. 3. Friends' delinquency partially mediates the association between friends' fatalism and violent delinquency
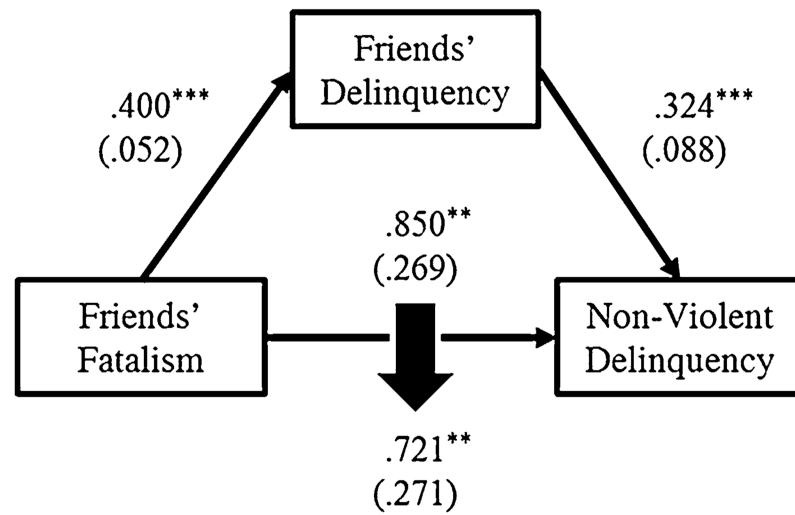
Fig. 4. Friends' delinquency partially mediates the association between friends' fatalism and non-violent delinquency
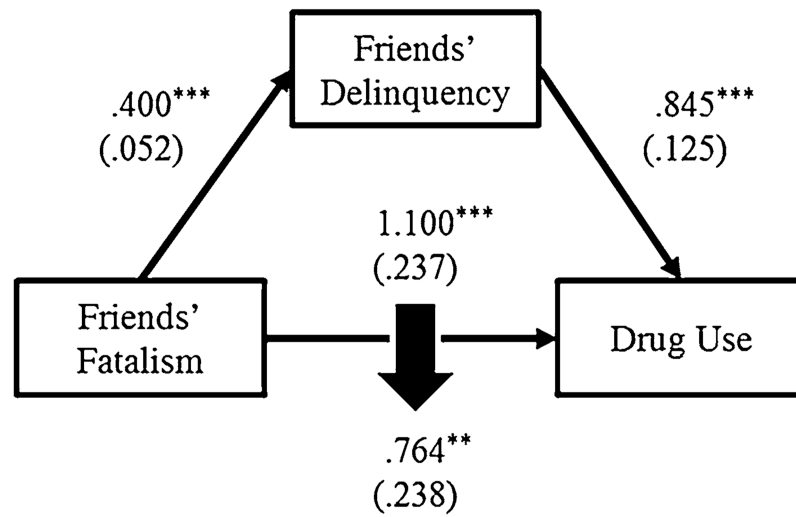
Fig. 5. Friends' delinquency partially mediates the association between friends' fatalism and drug use

Table 1

Individual descriptive statistics for outcome and explanatory measures, Add Health

Variable	Mean/%	(SE)	Min	Max
Violent delinquency[a]	−.021	(.013)	−0.979	4.962
Non-violent delinquency[a]	−.008	(.010)	−0.668	3.452
Drug use[a]	−.002	(.012)	−0.934	4.536
Prior violent delinquency[a]	−.036	(.013)	−1.427	4.632
Prior non-violent delinquency[a]	.006	(.013)	−2.039	4.224
Prior drug use[a]	−.025	(.011)	−1.228	4.199
Age	15.456	(.127)	11.817	20.553
Male	49 %			
White	71 %			
Black	16 %			
Latino	8%			
Other race	5%			
Single parent household	27 %			
Socioeconomic status	−.130	(.033)	−2.733	2.058
Receipt of public assistance	10 %			
Depression	−.059	(.015)	−1.168	3.085
Low self-control	−.020	(.014)	−1.486	2.843
Reflective decision making	−.057	(.014)	−3.412	1.906
Isolate	3%			
Respondent fatalism	13 %			
Friends' delinquency	−.018	(.012)	−1.087	3.112
Friends' fatalism	12 %			

Linearized standard errors in parentheses. Means and standard errors corrected using Add Health sampling weights. Individual N = 9,584

[a] Values represent the empirical Bayes residuals from unconditional 3-level Rasch models

Table 2

School-level descriptive statistics, Add Health

Variable	Mean/%	(SD)	Min	Max
School fatalism	13 %		0%	23.8 %
School socioeconomic status	−.099	(0.351)	−.643	1.139
Suburban	57 %			
Urban	27 %			
Rural	16 %			
Public	91 %			
Private	4.4 %			
Catholic	4.4 %			
Region: south	43 %			
Region: west	17 %			
Region: midwest	23 %			
Region: northeast	17 %			
School size	829.673	(625.250)	26	3334

Standard deviations in parentheses. School N = 113

Table 3

Means (proportions) of individual variables by respondent fatalism

Variable	Low fatalism		High fatalism	
	Mean/%	**(st. error)**	**Mean/%**	**(st. error)**
Violent delinquency[a]	−.060	(.014)	.246	(.061)
Non-violent delinquency[a]	−.028	(.011)	.132	(.030)
Drug use[a]	−.025	(.012)	.153	(.047)
Prior violent delinquency[a]	−.088	(.014)	.316	(.056)
Prior non-violent delinquency[a]	−.037	(.015)	.306	(.045)
Prior drug use[a]	−.049	(.011)	.138	(.033)
Age	15.436	(.128)	15.593	(.137)
Male	49 %		51 %	
White	71 %		68 %	
Black	16 %		15 %	
Latino	8%		10 %	
Other race	5%		6%	
Single parent household	26 %		30 %	
Socioeconomic status	−.115	(.033)	−.235	(.046)
Receipt of public assistance	9%		12 %	
Isolate	3 %^		3%	
Friends' fatalism	0.120^	(.004)	.144	(.007)
Friends' delinquency	−.029	(.013)	.056	(.017)
Depression	−.086	(.016)	.123	(.031)
Low self-control	−.050	(.014)	.184	(.030)
Reflective decision making	−.048	(.014)	−.116	(.038)

Linearized standard errors in parentheses. Means and standard errors corrected using Add Health sampling weights. Individual N = 9,584

[a] Values represent the empirical Bayes residuals from unconditional 3-level Rasch models

^ All differences are significant unless noted by a

Table 4

Multi-level Rasch models of violent delinquency regressed on friends' and school fatalism

Variable	Model 1		Model 2		Model 3		Model 4	
	b	(st. error)	b	(st. error)	b	(st. error)	b	(st. error)
Individual variables (N = 9,584)								
Age	-.101**	(.030)	-.102**	(.030)	-.113***	(.032)	-.117***	(.033)
Age²	-.015	(.013)	-.015	(.013)	-.013	(.013)	-.008	(.012)
Male	.384**	(.117)	.388**	(.117)	.380**	(.118)	.423***	(.117)
Black	.270*	(.128)	.276*	(.130)	.311*	(.127)	.346**	(.129)
Latino	.359*	(.171)	.348*	(.164)	.346*	(.159)	.367*	(.155)
Other race	.110	(.260)	.108	(.261)	.117	(.254)	.135	(.258)
Single parent household	.021	(.070)	.019	(.071)	.011	(.072)	-.010	(.070)
Socioeconomic status	-.102	(.082)	-.101	(.082)	-.087	(.082)	-.074	(.081)
Receipt of public assistance	.023	(.083)	.024	(.084)	.019	(.085)	-.007	(.088)
Isolate	.020	(.183)	.030	(.185)	.041	(.185)	.014	(.197)
Prior violent delinquency	.930***	(.034)	.923***	(.034)	.912***	(.034)	.855***	(.037)
Friends' fatalism	.599*	(.253)	.591*	(.250)	.429	(.252)	.401	(.264)
Respondent fatalism			.175	(.114)	.162	(.118)	.102	(.117)
Friends' delinquency					.423***	(.106)	.351**	(.111)
Depression							.067	(.085)
Low self-control							.336**	(.109)
Reflective decision making							-.105+	(.063)
School variables (N = 113)								
School fatalism	-.289	(.838)	-.459	(.869)	-.547	(.875)	-.648	(.885)
School socioeconomic status	-.409*	(.164)	-.416*	(.165)	-.409*	(.164)	-.438*	(.173)
Urban	.390***	(.095)	.389***	(.095)	.373***	(.096)	.376***	(.099)
Rural	-.181	(.121)	-.180	(.122)	-.182	(.117)	-.164	(.115)
Private	-.402**	(.145)	-.391**	(.147)	-.329*	(.155)	-.365*	(.154)
Catholic	.653**	(.202)	.652**	(.201)	.650**	(.202)	.661**	(.208)

Variable	Model 1		Model 2		Model 3		Model 4	
	b	(st. error)	b	(st. error)	b	(st. error)	b	(st. error)
Region: west	.234	(.146)	.239	(.145)	.241	(.146)	.166	(.148)
Region: midwest	.122	(.091)	.124	(.091)	.095	(.089)	.051	(.090)
Region: northeast	.045	(.149)	.047	(.150)	.032	(.145)	.026	(.145)
School size	.000	(.000)	.000	(.000)	.000	(.000)	.000[+]	(.000)
Intercept	−3.681***	(.079)	−3.682***	(.079)	−3.697***	(.079)	−3.732***	(.076)

Robust standard errors in parentheses. Coefficients for item severities omitted from table. Missing values on individual-level variables imputed using multiple imputation with 10 replications

[+] $p < .10$ (two-tailed tests)

* $p < .05$,

** $p < .01$,

*** $p < .001$

Table 5

Multi-level Rasch models of non-violent delinquency regressed on friends' and school fatalism

Variable	Model 1		Model 2		Model 3		Model 4	
	b	(st. error)	b	(st. error)	b	(st. error)	b	(st. error)
Individual variables (N = 9,584)								
Age	-.123***	(.029)	-.123***	(.029)	-.132***	(.030)	-.135***	(.030)
Age²	-.031*	(.012)	-.031*	(.012)	-.031*	(.013)	-.027*	(.013)
Male	.121	(.095)	.121	(.095)	.115	(.095)	.129	(.091)
Black	-.022	(.107)	-.022	(.107)	-.001	(.110)	.009	(.104)
Latino	.171	(.106)	.172	(.106)	.171	(.106)	.177+	(.101)
Other race	-.015	(.186)	-.015	(.186)	-.004	(.179)	.008	(.179)
Single parent household	-.007	(.069)	-.007	(.069)	-.009	(.070)	-.020	(.071)
Socioeconomic status	.036	(.054)	.036	(.054)	.047	(.053)	.059	(.053)
Receipt of public assistance	-.086	(.093)	-.085	(.093)	-.095	(.093)	-.118	(.091)
Isolate	.045	(.230)	.044	(.229)	.048	(.227)	.026	(.231)
Prior non-violent delinquency	.859***	(.039)	.860***	(.038)	.849***	(.039)	.795***	(.046)
Friends' fatalism	.850**	(.268)	.850**	(.269)	.721**	(.271)	.705*	(.275)
Respondent fatalism			-.020	(.092)	-.030	(.095)	-.073	(.099)
Friends' delinquency					.324***	(.088)	.271**	(.088)
Depression							.019	(.048)
Low self-control							.264***	(.070)
Reflective decision making							-.030	(.055)
School variables (N = 113)								
School fatalism	-2.132**	(.806)	-2.113*	(.815)	-2.164*	(.843)	-2.173*	(.860)
School socioeconomic status	-.186	(.191)	-.186	(.190)	-.179	(.190)	-.195	(.189)
Urban	.186+	(.096)	.186+	(.096)	.175+	(.097)	.180+	(.095)
Rural	-.164	(.133)	-.164	(.133)	-.160	(.132)	-.143	(.131)
Private	-.308	(.194)	-.309	(.193)	-.263	(.193)	-.301	(.194)
Catholic	.416**	(.142)	.416**	(.141)	.418**	(.141)	.422**	(.140)

Variable	Model 1		Model 2		Model 3		Model 4	
	b	(st. error)	*b*	(st. error)	*b*	(st. error)	*b*	(st. error)
Region: west	.533***	(.147)	.532***	(.146)	.536***	(.145)	.492**	(.144)
Region: midwest	.230+	(.118)	.229+	(.118)	.207+	(.120)	.178	(.121)
Region: northeast	.443**	(.147)	.443**	(.146)	.430**	(.144)	.433**	(.144)
School size	.000	(.000)	.000	(.000)	.000	(.000)	.000	(.000)
Intercept	−3.046***	(.060)	−3.046***	(.060)	−3.054***	(.059)	−3.072***	(.058)

Robust standard errors in parentheses. Coefficients for item severities omitted from table. Missing values on individual-level variables imputed using multiple imputation with 10 replications

+ $p < .10$ (two-tailed tests)

* $p < .05$,

** $p < .01$,

*** $p < .001$

Table 6

Multi-level Rasch models of drug use delinquency regressed on friends' and school fatalism

Variable	Model 1		Model 2		Model 3		Model 4	
	b	(st. error)	*b*	(st. error)	*b*	(st. error)	*b*	(st. error)
Individual variables (N = 9,584)								
Age	.061	(.038)	.061	(.037)	.041	(.038)	.031	(.036)
Age²	−.038*	(.016)	−.038*	(.016)	−.035*	(.016)	−.026+	(.015)
Male	−.142	(.094)	−.144	(.095)	−.167+	(.096)	−.122	(.099)
Black	−.218+	(.123)	−.213+	(.123)	−.150	(.127)	−.172	(.119)
Latino	.386**	(.135)	.375**	(.137)	.366**	(.140)	.340*	(.154)
Other race	−.119	(.303)	−.124	(.307)	−.100	(.289)	−.169	(.290)
Single parent household	.135	(.105)	.134	(.105)	.134	(.107)	.126	(.105)
Socioeconomic status	.078	(.048)	.079+	(.048)	.114*	(.046)	.147**	(.051)
Receipt of public assistance	.053	(.080)	.050	(.082)	.023	(.080)	−.049	(.082)
Isolate	−.670*	(.311)	−.663*	(.309)	−.622*	(.305)	−.654*	(.295)
Prior drug use	1.308***	(.067)	1.297***	(.067)	1.241***	(.070)	.143***	(.085)
Friends' fatalism	1.107***	(.240)	1.100***	(.237)	.764**	(.238)	.742**	(.248)
Respondent fatalism			.176	(.116)	.152	(.110)	.056	(.112)
Friends' delinquency					.845***	(.125)	.741***	(.126)
Depression							.181**	(.067)
Low self-control							.441***	(.066)
Reflective decision making							.000	(.052)
School variables (N = 113)								
School fatalism	−1.618	(2.254)	−1.790	(2.269)	−1.925	(2.211)	−1.888	(2.259)
School socioeconomic status	−.187	(.269)	−.190	(.270)	−.179	(.252)	−.215	(.249)
Urban	−.275+	(.162)	−.277+	(.162)	−.311*	(.151)	−.291+	(.154)
Rural	−.247+	(.145)	−.242+	(.145)	−.238+	(.138)	−.218	(.135)
Private	−.366	(.452)	−.359	(.453)	−.214	(.426)	−.235	(.433)
Catholic	.122	(.245)	.115	(.246)	.136	(.225)	.139	(.214)

Variable	Model 1		Model 2		Model 3		Model 4	
	b	(st. error)	*b*	(st. error)	*b*	(st. error)	*b*	(st. error)
Region: west	.470*	(.195)	.475*	(.195)	.489**	(.183)	.410*	(.181)
Region: midwest	.242	(.158)	.243	(.159)	.184	(.152)	.134	(.153)
Region: northeast	.110	(.220)	.113	(.221)	.083	(.203)	.088	(.196)
School size	.000*	(.000)	.000*	(.000)	.000*	(.000)	.000*	(.000)
Intercept	−3.362***	(.089)	−3.365***	(.089)	−3.411***	(.087)	−3.486***	(.082)

Robust standard errors in parentheses. Coefficients for item severities omitted from table. Missing values on individual-level variables imputed using multiple imputation with 10 replications

[+] $p < .10$ (two-tailed tests)

[*] $p < .05$,

[**] $p < .01$,

[***] $p < .001$