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Community structural instability, anomie, imitation and adolescent suicidal behavior

Thorolfur Thorlindsson*, Jón Gunnar Bernburg

Department of Sociology, University of Iceland, 101 Reykjavik, Iceland

Abstract

The current study examines the contextual effects of community structural characteristics, as well as the mediating role of key social mechanisms, on youth suicidal behavior in Iceland. We argue that the contextual influence of community structural instability on youth suicidal behavior should be mediated by weak attachment to social norms and values (anomie), and contact with suicidal others (suggestion-imitation). The data comes from a national survey of 14–16 years old adolescents. Valid questionnaires were obtained from 7018 students (response rate about 87%). The findings show that the community level of residential mobility has a positive, contextual effect on adolescent suicidal behavior. The findings also indicate that the contextual effect of residential mobility is mediated by both anomie and suggestion-imitation. The findings offer the possibility to identify communities that carry a substantial risk for adolescent suicide as well as the mechanisms that mediate the influence of community structural characteristics on adolescent risk behavior. © 2008 The Association for Professionals in Services for Adolescents. Published by Elsevier Ltd. All rights reserved.

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While the effects of community structural characteristics on adolescent problems have been studied extensively, especially with regard to adolescent crime and delinquency, such effects have rarely been applied to adolescent suicidal behavior. This lack of research is surprising for several reasons. First, adolescent suicide is a huge and growing social problem. Suicide is among the leading

* Corresponding author. Tel.: +354 5511091.

E-mail address: thorotho@hi.is (T. Thorlindsson).

causes of mortality of adolescents in both Europe and the United States (Borrell et al., 2001; Brown, 2001; Spicer & Miller, 2000). Second, the longstanding tradition in suicide research, grounded in the seminal work of Durkheim (1951[1897]), suggests that community structural instability should influence suicide because it disrupts social relationships and undermines commitment to social norms, values, and beliefs. Finally, because prior research shows that community structural instability is related to adolescent problem behavior (Bernburg & Thorlindsson, 2007; Sampson & Groves, 1989), it seems reasonable to hypothesize that community structural instability should be related to adolescent suicidal behavior.

The structural stability of the local community plays an important role in the welfare of adolescents because it produces consistency and duration in social relationships among community members. Thus, structural stability helps to build trust, enhance social support and facilitate social control through commitment to community values and norms. In the same vein, structural instability in the community increases adolescent problems because it weakens social networks and adolescents' ties to key institutions. Research suggests that residential mobility and family disruption are two key structural characteristics of communities that undermine the durable features of community, thereby increasing structural instability. First, a high level of residential mobility disrupts the social relations that bind adolescents to community and help them to achieve conventional goals (Bursik, 1988; Coleman, 1988; Sampson & Groves, 1989; Shaw & McKay, 1969[1942]). As Coleman (1988) argues, every move breaks the social relations that are crucial for adolescents to hold and attain desirable community goals. Thus, communities characterized by a high level of residential mobility are likely to have reduced social network density and a frequent disruption of the key social networks that provide stability, support and control in a community.

Second, a high community level of family disruption may weaken social ties among community members and thus increase structural instability. Single parents and impoverished parents have reduced capacity to participate in community activity and form ties with other community members (Knoester & Haynie, 2005; Sampson, 1985). A high number of single parent families in the community may therefore weaken key social networks that provide community stability.

Research shows that both residential mobility and family disruption are community characteristics that produce contextual effects on adolescent outcomes, because they influence adolescent outcomes over and beyond the individual-level effects of these characteristics on adolescent outcomes (Bernburg & Thorlindsson, 2007; Elliott et al., 1996; Sampson, Raudenbush, & Earls, 1997; Smith & Jarjoura, 1989).

The theoretical argument above implies that the effects of the community context on adolescent outcomes are emergent and cannot be reduced to individual-level factors. Accordingly, we predict that community structural instability should have a contextual effect on adolescent suicidal behavior, that is, the community-level effect should persist even after controlling for individual-level measures of community instability and other relevant variables. Furthermore, the theory raises important issues pertaining to the social processes that translate contextual characteristics into individual outcomes. To understand the contextual influence of community characteristics on individual outcomes, we need to specify and test the mediating social mechanism involved (Kornhauser, 1978; Sampson, Raudenbush, & Earls, 1997; Shaw & McKay, 1969[1942]; Thorlindsson & Bernburg, 2004). Findings from criminology indicate that the contextual effects of community structural instability and community disadvantage on crime and delinquency are mediated in part by social ties among community residents and their commitment to mainstream social norms

and values (Bellair, 1997; Bellair, 2000; Bernburg & Thorlindsson, 2007; Warner, 2003). Thus, Bernburg and Thorlindsson (2007) found both ties to community based social networks and normlessness to mediate a part of the contextual effect of community structural instability (residential mobility and family disruption) on adolescent delinquency.

Bernburg and Thorlindsson (2007) have shown that community structural instability has a contextual effect on normlessness (weak attachment to social norms and values). Although unable to demonstrate the mechanism involved, Bernburg and Thorlindsson suggested that weak ties among parents in a community reduce co-operation and consensus about normative standards, thereby undermining normative consistency in the social world of adolescents. Drawing on Durkheim's (1951/1897) theory of suicide, we predict that weak attachment to social norms should mediate the contextual effect of community structural instability on adolescent suicidal behavior. In *Suicide*, Durkheim argued that the weakening of social relationships that regulate behavior tends to undermine commitment to norms and collective ideas, resulting in a state of anomie that again leads to higher rates of suicide. Anomie refers to the absence of clear rules of behavior, and ambiguity in rules and goals, which creates a state where the individual faces uncertainty, conflicting expectation, and ambiguous norms and values. Anomie may be especially pertinent during adolescence, which is a period in life where the individual is struggling with problems of meaning and purpose. Accordingly, we predict that anomie should mediate the effect of community structural instability on adolescent suicidal behavior.

Another line of thought suggests that the effects of community characteristics on adolescent outcomes are mediated by social contact with deviant others. The key idea is that associating with deviant others breeds deviance through mechanisms of imitation and social learning (Akers, Krohn, Lanza-Kaduce, & Radosevich, 1979; Sutherland & Cressey, 1984; Tittle, Burke, & Jackson, 1986). Consequently, adolescents who live in communities characterized by high levels of structural instability are more likely to be deviant, because they are at an increased risk of associating with deviant others. Empirical research supports this notion. Thorlindsson and Bernburg (2004) found association with delinquent peers to mediate the effect of community family disruption on adolescent delinquency. Other studies have shown that association with substance using peers mediates a part of the effect of community disadvantage on adolescent substance use (Cattarello, 2000; Chuang, Ennett, Bauman, & Foshee, 2005).

The notion that suicide is contagious has a long history in social science research. It stems from the work of Gabriel Tarde (1962[1903]) who argued that suicide spreads by processes of imitation and suggestion. There is considerable research that supports Tarde's theory (Baller & Richardson, 2002; Bjarnason & Thorlindsson, 1994; Farberow, Gallagher, Gilewsky, & Thompson, 1987; Thorlindsson & Bjarnason, 1998). Coming into contact with suicidal individuals increases the risk of suicidal thoughts and suicide attempts among adolescents (Bearman & Moody, 2004; Bjarnason & Thorlindsson, 1994; Farberow et al., 1987; Thorlindsson & Bjarnason, 1998). Research also shows that adolescent suicides tend to cluster within certain areas (Baller & Richardson, 2002). This literature suggests that imitation-suggestion is an important risk factor in adolescent suicidal behavior. Therefore, imitation-suggestion may play a role in mediating the contextual effect of community instability on youth suicidal behavior. Adolescents who live in communities where social structural instability is common, are more likely to associate with suicidal others, which again increases the risk of suicidal thoughts and suicide attempts. We predict that social contacts with suicidal others may mediate the contextual effect of community structural instability on adolescent suicidal behavior.

While there exist individual-level studies on residential mobility and suicide (Haynie, South, & Bose, 2006) as well as aggregate-level studies on migration and suicide (Baller & Richardson, 2002; Stack, 1990; Stack, 1993), we are not aware of any multilevel studies on adolescent suicidal behavior that examine both community structural instability and the social mechanisms that mediate the effects of contextual characteristics on individual suicidal behavior.

The aim of the current study is to fill this gap in the research on adolescent suicidal behavior, using multilevel, population based data on two cohorts of Icelandic adolescents. First, we examine the contextual effects of indicators of community structural instability on adolescent suicidal behavior. Second, we examine the role of key mechanisms that may mediate between community structural instability and adolescent suicidal behavior. Focusing on the role of imitation and normlessness, we predict that these variables will, in part, mediate the effects of community structural instability on adolescent suicidal behavior.

We define communities by using public schools and the neighboring community (Bernburg & Thorlindsson, 2007; Thorlindsson & Bernburg, 2004). Icelandic public schools provide a meaningful operant definition of community that is highly relevant for studying adolescents. Almost all Icelandic adolescents attend public schools, and they are selected into the schools based on residential location. Hence, the school includes the majority of adolescents in a given local area. Moreover, this definition of community serves to create area boundaries in the adolescent's social world. One advantage of our survey design is that it is population based rather than sample based. When researchers have aggregated survey responses to create measures of community characteristics, they typically use small samples of community residents (Sampson & Groves, 1989). Our data include whole cohorts of adolescents rather than samples. This feature of the data allows us to create highly representative aggregate measures of community characteristics.

Method

The data come from a national survey of Icelandic adolescents conducted in 1992 (see Thorlindsson, Sigfusdottir, Bernburg, & Halldorsson, 1998). Anonymous questionnaires were administered to all students present in class on one day in March 1992. The full sample consists of all students 14 and 16 years old, attending the compulsory 9th and 10th grade of secondary school. Questionnaires were administered with sealed envelopes by teachers and research assistants. Students who were not present in school, on the day of the survey, were not included. Valid questionnaires were obtained from about 87% of the two cohorts (7018 students). The average proportion of respondents to the population of the two cohorts in each school unit is approximately 0.90. To ensure a statistically sufficient number of individuals within each school, schools with less than 20 respondents, almost all of which located in rural areas, were excluded. The current analysis is thus based on a sample of 6169 individuals (49% female) in 79 public schools. On average, the school level data are based on about 81 respondents from each school, with a standard deviation of about 65. The largest school had 330 respondents, and the smallest had 21 respondents.

Measurement

Measurement for *suicide attempt*, *suicide ideation*, and *suicide suggestion* is taken from Bjarnason and Thorlindsson (1994). Suicide attempt is coded "1" if the respondent answers

“yes” to one of two questions about having attempted suicide (“Have you ever attempted suicide?”; “Did you attempt suicide during the current school year?”) and “0” otherwise. Suicide ideation is coded “1” if the respondent answers “yes” to one of two questions about having contemplated suicide (“Has the thought of committing suicide ever crossed your mind?”; “Have you ever thought seriously about committing suicide?”) and “0” otherwise. All of these survey questions had dichotomous answers (No, Yes).

Suicide suggestion is a cumulative scale comprised of five dichotomous questions (No = 0, Yes = 1): “Has someone told you that she or he was thinking of committing suicide?”, “Have you ever known someone who attempted suicide?”, “Have you ever known someone who committed suicide?”, “Have you ever had a good friend or someone really close who attempted suicide?”, and “Have you ever had a good friend or someone really close who committed suicide?” A positive answer to all five questions yields 5 points, or maximum contact with suicidal others.

Anomie is an index comprised of seven Likert scales, adapted from Dean (1961). Respondents indicated on a four point scale what they felt about the following statements: “In the past, people were in no doubt about what they should do”, “Fairness, honesty, and good customs are no longer valued”, “It is often okay to break rules when they prevent you in doing what you want”, “People’s ideas change so much that I wonder if we’ll ever have anything to depend on”, “Everything is variable, and there just aren’t any definite rules to live by” (Cronbach’s Alpha = 0.70).

A few control variables are included in the current analysis. A dummy variable for respondent’s sex was coded “1” for females and “0” for males. *Residential stability* is coded “1” if respondents indicated moving to a new neighborhood/community during the past 12 months, and “0” otherwise. *Family disruption* is coded “1” if the respondent indicates not living with both of his parents and “0” otherwise. *Parents’ college education* is coded “1” if respondent indicates having at least one college-educated parent and “0” otherwise.

The measures of community characteristics are aggregated survey items. *Residential mobility* is the school proportion of respondents that has moved to another community during the past 12 months. *Family instability* is the school proportion of respondents not living in a two parent households. *Parents’ college education* is the school proportion of respondents indicating having at least one college-educated parent. Table 1 reports the descriptive statistics.

Statistical analysis

Hierarchical regression is the appropriate statistical tool for analyzing nested, multilevel data (Bryk & Raudenbush, 1992). Guo and Zhao (2000), we use logistic (Bernoulli) hierarchical regression for dichotomous dependent variables (suicide attempt and suicide ideation) and linear hierarchical regression for continuous dependent variables (anomie and contact with suicidal others). HLM 5 is used for the estimation of the models (Raudenbush, Bryk, & Cheong, 2001). The individual-level equations:

$$\text{Linear model: } Y_{ij} = \beta_{0j} + \sum \beta_{kj} (X_{ijk} - \overline{X_{\cdot\cdot k}}) + r_{ij}$$

Table 1
Descriptive statistics

	Mean	Standard deviation	Minimum value	Maximum value
Community-level ($N = 79$)				
Family instability	0.23	0.08	0.06	0.45
Residential mobility	0.09	0.05	0.00	0.25
Urban location	0.37	0.49	0	1
College-educated parents	0.30	0.16	0.00	0.75
Individual-level ($N = 6110$)				
Female	0.50	0.50	0	1
Moved in last 12 months	0.09	0.28	0	1
Not living with both parents	0.24	0.43	0	1
Parents' college education	0.38	0.39	0	1
Anomie	-0.01	0.60	-1.73	1.89
Contact with suicidal others	1.01	1.34	0	5
Suicide attempts	0.06	0.24	0	1
Suicide ideation	0.32	0.47	0	1

$$\text{Binary model : } \log \left[\frac{\Pr(Y_{ij} = 1)}{1 - \Pr(Y_{ij} = 1)} \right] = \beta_{0j} + \sum \beta_{kj} (X_{ijk} - \bar{X}_{\cdot k}) + r_{ij}$$

where Y_{ij} is a value on the dependent variable for individual i in community j ; β_{0j} is the mean value of the dependent variable in community j adjusted for the differences among the j units in X_{ijk} ; β_{kj} is a slope coefficient for the individual-level variable X_{ijk} ; $(X_{ijk} - \bar{X}_{\cdot k})$ refer to individual-level variables centered at their grand means; and r_{ij} is the error term. The baseline community-level equation:

$$\beta_{0j} = \gamma_{00} + \sum \gamma_{k01} \bar{X}_{jk} + u_{0j}$$

where γ_{00} is the intercept, $\sum \gamma_{k01}$ are the (contextual) effects of the community-level characteristics \bar{X}_{jk} on the adjusted average value of the dependent variable in community j , and u_{0j} is the error term for the community-level random effect on the intercept β_{0j} . We estimate all individual-level effects as random across communities.

Results

Our findings indicate that about 31% of the respondents say that they have had thoughts of suicide (suicide ideation), while roughly 6% report that they have attempted suicide. The descriptive statistics for the individual survey items comprising the indicators of suicide ideation and suicide attempts are shown in [Appendix A](#), which also reports the descriptive statistics for the survey items comprising the suicide suggestion scale. These findings show that about 28% have known someone who has attempted suicide and about 16% have known a good friend or someone really close who has attempted suicide.

We follow Krull and MacKinnon’s (1999, 2001) approach to examining mediated effects in multilevel models. First, we examine the contextual effects of the community characteristics on suicidal behavior. Second, we examine the mediation role of anomie and contact with suicidal others. The mediation argument implies that the contextual effects of the community factors on suicidal behavior should decrease when controlling for the effects of the mediator variables on suicidal behavior. Finally, we examine whether the community characteristics have contextual effects on the mediator variables, namely, on anomie and contact with suicidal others.

Table 2 reports results from the regression of suicide attempts. Model 1 includes all independent variables except the mediator variables. The findings show that residential mobility has a significant and positive, contextual effect on the odds of suicide attempt. Moreover, the prevalence of college-educated parents has a significant, negative effect on the odds of suicide attempt. Other community variables have no significant effects on suicide attempt. The individual-level effects are in line with expectations. Thus, females have a heightened risk of suicide attempts, as do those who have moved in the last 12 months, and those who do not live with both parents. Children who have college-educated parents have a decreased risk of suicide attempt.

Models 2 through 4 show whether the proposed mediator variables, that is, anomie and contact with suicidal others, account for any of the contextual effects of the community characteristics on suicide attempt. Including anomie in the equation in Model 2 produces a substantial drop in the contextual effects observed in Model 1. The coefficient for the effect of community residential mobility drops by about 29% between Model 1 and Model 2 (from 3.19 to 2.28). Similarly, the coefficient for the effect of college-educated parents drops by about 41% between Model 1 and Model 2. Moreover, the individual-level effect of anomie on suicide attempts is positive and statistically significant. These findings indicate that community residential mobility has a contextual effect on the odds of suicide attempt in part because it influences anomie. Similarly, the

Table 2
Hierarchical logistic regression of suicide attempts on individual-level and community-level independent variables.

	Model 1	Model 2	Model 3	Model 4
Community-level (<i>N</i> = 79)				
Family instability	0.19	−0.10	0.22	0.25
Residential mobility	3.19**	2.28*	1.98*	1.58
Urban location	−0.04	−0.09	−0.18	−0.26**
College-educated parents	−1.28**	−0.76*	−0.36	−0.15
Individual-level (<i>N</i> = 6169)				
Female	0.60***	0.52***	0.05	0.16**
Moved in last 12 months	0.77***	0.75***	0.77***	0.69***
Not living with both parents	0.50***	0.30***	0.27**	−0.12
Parents’ college education	−0.19*	−0.19**	−0.23**	−0.21**
Normlessness	—	0.70***	—	0.65***
Contact with suicidal others	—	—	0.55***	0.42***

Note: the table reports unstandardized coefficients. Significance tests are based on robust standard errors. All models estimate random errors (not shown in table).

p* < 0.05; *p* < 0.01; ****p* < 0.001 (two-tailed tests).

community level of college-educated parents influences the odds of suicide attempt in part because it influences anomie.

Model 3 supports the mediating role of suggestion-imitation. Adding contact with suicidal others to the equation produces a large drop in the contextual effects of both residential mobility and college-educated parents on suicide attempt. The effect of residential mobility drops by about 38% (from 3.19 in Model 1 to 1.98 in Model 3) and the effect of college-educated parents drops by about 72% (from -1.28 in Model 1 to -0.36 in Model 3). Moreover, contact with suicidal others has a positive and significant effect on suicide attempt. Model 4 shows that anomie and contact with suicidal others jointly explain about 50% of the contextual effect of residential mobility on suicidal attempt (compare Model 1 and Model 4) and about 88% of the effect of college-educated parents.

In Table 3, we replicate the analysis for suicide ideation. The findings show that community residential mobility has a borderline significant ($p = 0.067$), positive effect on suicide ideation in Model 1. This effect is largely explained by anomie and contact with suicidal others in the subsequent models. The effect of the community level of college-educated parents, however, is less consistent and only emerges as statistically significant after anomie and contact with suicidal others are controlled.

Finally, in order to fully test the mediating process, we examine the effects of the community characteristics on the mediator variables, that is, on anomie and contact with suicidal others. In support of the current theoretical model, the findings in Table 4 show that community residential mobility has a significant and positive, contextual effect on both anomie (Model 1) and contact with suicidal others (Model 2). Moreover, the community level of college-educated parents has a significant and negative effect on both anomie and contact with suicidal others.

Table 3

Hierarchical logistic regression of suicide ideation on individual-level and community-level independent variables.

	Model 1	Model 2	Model 3	Model 4
Community-level ($N = 79$)				
Family instability	0.15	0.02	0.50	0.39
Residential mobility	2.48 [†]	2.02	1.24	0.70
Urban location	-0.04	-0.10	-0.05	-0.09
College-educated parents	0.38	0.71*	0.46 [†]	0.69*
Individual-level ($N = 6169$)				
Female	0.68***	0.85***	0.45***	0.63***
Moved in last 12 months	0.38***	0.34**	0.30**	0.27**
Not living with both parents	0.28***	0.24***	0.18**	0.16**
Parents' college education	-0.06	-0.02	-0.01	0.02
Normlessness	—	0.92***	—	0.82***
Contact with suicidal others	—	—	0.48***	0.43***

Note: the table reports unstandardized coefficients. Significance tests are based on robust standard errors. All models estimate random errors (not shown in table).

[†] $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (two-tailed tests).

Table 4

Hierarchical linear regression of anomie and contact with suicidal others regressed on individual-level and community-level independent variables.

	Anomie	Contact with suicidal others
Community-level (<i>N</i> = 79)		
Family instability	0.22	−0.30
Residential mobility	0.55*	3.00*
Urban location	0.04	0.02
College-educated parents	−0.30***	−0.83**
Individual-level (<i>N</i> = 6169)		
Female	−0.12***	0.56***
Moved in last 12 months	0.07*	0.23**
Not living with both parents	0.06**	0.23***
Parents' college education	−0.06**	−0.10*

Note: the table reports unstandardized coefficients. Significance tests are based on robust standard errors. All models estimate random errors (not shown in table).

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (two-tailed tests).

Conclusion

Suicide research has rarely looked at the effects of community characteristics on suicidal behavior while taking into account key mediating social mechanisms. We have attempted to fill this gap in the research, focusing on the direct and indirect effects of community structural instability on both suicide ideation and suicide attempts. The findings indicate that community residential mobility has a significant and positive, contextual effect on suicide ideation and suicide attempts. The findings also show that both individual-level residential mobility and family instability have significant effects on suicidal behavior. These results lend consistent support to the basic notion of the theory of community structural instability in the sense that they demonstrate how disruptions in social relationships that stem from structural characteristic of communities can have harmful effects on adolescents.

The findings are also important because they show that the community-level effect of residential mobility on suicidal behavior does not simply reflect the summation of the individual-level effects of residential instability on suicidal behavior. To the contrary, they reflect the emergent influence of the community-level structure that cannot be reduced to the individual-level (Thorlindsson, Bjarnason, & Sigfusdottir, 2007). Documenting such emergent effects is important because it draws attention to the shortcomings of treating suicide as an individual phenomenon only.

The findings support our predictions about the mediating role of anomie as well as imitation-suggestion. They indicate that the contextual effects of community residential mobility on both suicide ideation and suicide attempts are mediated by both these social mechanisms. The mediating role of anomie is of considerable importance, empirically as well as theoretically. The findings suggest that community structural instability influences adolescent suicidal behavior because it disrupts the social ties that attach adolescents to norms. Thus, the findings lend a considerable support to Durkheim's original theses of anomic suicide. In this context, it may be pointed out that while Durkheim proposed that anomie resulted from a lack of norms that regulated behavior,

the modern scene may suggest that adherence to norms as in the case of organized deregulation may also lead to anomie (Merton, 1938). In this light, it seems likely that systematic deregulation, such as we have witnessed in the United States, may have serious consequences for youth and adolescents. It would therefore be of particular interest to study the influence of deregulation on the welfare of children and adolescents.

The findings also show that contact with suicidal others accounts for a part of the contextual effect of community residential mobility on both suicidal ideation and suicide attempts. In fact, imitation-suggestion plays a substantial role in mediating the contextual effects on suicide. Jointly, the two variables account for about two-thirds of the contextual effect of residential mobility on suicide attempts, and about half of the contextual effect on suicide ideation.

Noteworthy, our findings show that parents' education has a significant and negative, contextual effect on suicide attempts. A higher prevalence of college-educated parents in a community is associated with reduced odds of suicide attempt, net of the individual-level effect of parents' education. Moreover, the community-contextual effect of parents' education on suicide attempts is largely mediated by anomie and imitation-suggestion. Thus, the influence of community-level college education on suicide attempts is reduced by about 88% when these two variables are entered into the model. This finding indicates that the contextual effect of parental education on suicide attempts is due to the fact that community level of parents' education reduces both anomie and contact with suicidal others. While these findings were not predicted, they are in line with previous research that has found an effect of community concentration of low social status/disadvantage on adolescent deviant behavior, including substance use (Cattarello, 2000; Chuang et al., 2005) and delinquent behavior (Smith & Jarjoura, 1989). Some of this research, in fact, has found peer deviance to mediate the effects of community disadvantage on deviant behavior (Cattarello, 2000; Chuang et al., 2005).

While these findings increase our understanding of the community context of suicide they also underline the complex nature of adolescent suicidal behavior. Individual-level research has identified a host of risk factors for adolescent suicidal behavior. Thus, prior research has shown that depression, low self-esteem, and alcohol and substance use are related to adolescent suicide (e.g. see Bearman & Moody, 2004; Bjarnason & Thorlindsson, 1994). It is, however, not a straightforward task to incorporate these factors in a multilevel model like the one tested above. Several theoretical issues need to be worked out to specify the relationships involved. Thus, the suggestion process may involve various social mechanisms that are entangled in a complex web of social relationships (Akers et al., 1979; Lester, 1987; Thorlindsson & Bjarnason, 1998). Akers et al. (1979) have conceptualized the influence of suggestion as a learning process in which reinforcement plays a crucial role. In a similar vein, Lester (1987) argues that adolescents can become participants in suicidal subculture that increases the risk of suicidal behavior. Risk factors such as depression, low self-esteem, and substance use could play a role in selecting individuals into the subculture or they could be a part of the collective mood in the subculture. Elaborating on these issues and testing alternative or complementary models fall beyond the scope of this paper. Future research should look closer at the various mechanisms involved in the suggestion process and examine how other risk factors fit into our conceptual multilevel framework.

We should note that the current investigation uses cross-sectional data and does therefore not provide time-ordered measurement of the variables. Hence, the study design does not allow for strict causal inferences regarding the individual-level mechanisms. A crucial part of the current

analysis, however, focuses on contextual effects, making the theoretical and methodological issues involved more complex. The emergent nature of contextual effects does not assume conventional notions of time sequencing (Bernburg & Thorlindsson, 2007; Sawyer, 2002, 2003). Further research should address some of these issues. Also, the multilevel-analysis calls for a simultaneous analysis of individual-level and contextual factors. A cross-sectional research design is more appropriate for this focus.

The present findings have important implications for prevention. Documenting community effects on suicidal behavior offers the possibility to identify communities that carry a substantial risk for adolescent suicide. This is important for prevention work, especially, since we can identify the social mechanisms that mediate the influence of community structural instability on individual risk behavior. Once communities characterized by structural instability are identified, it should be possible to work with the mediating social mechanisms to counteract the risks enhanced by community structure.

The high cost of adolescent suicide is spurring efforts to identify the risk factors involved. However, we need more research on this complex topic. Our findings demonstrate the complex interplay of individual- and community-level factors in the social context of adolescent suicidal behavior. They strongly suggest that the organizers of prevention work need to take both community- and individual-level factors as well as key social mediating mechanisms into account.

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Appendix A. Descriptive statistics for the measurement instruments comprising the indicators of suicide ideation, suicide attempts, and suicide suggestion

	No (%)	Yes (%)
“Has someone told you that she or he was thinking of committing suicide?”	68.9	31.1
“Have you ever known someone who attempted suicide?”	72.0	28.0
“Have you ever known someone who committed suicide?”	79.0	21.0
“Have you ever had a good friend or someone really close who attempted suicide?”	83.6	16.4
“Have you ever had a good friend or someone really close who committed suicide?”	93.2	6.8
“Has the thought of committing suicide ever crossed your mind?”	68.9	31.1
“Have you ever thought seriously about committing suicide?”	84.6	15.4
“Have you ever attempted suicide?”	94.1	5.9
“Did you attempt suicide during the current school year?”	96.4	3.6

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