

## Youth Exposure to Suicide Attempts: Relative Impact on Personal Trauma Symptoms



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**Introduction:** The purpose of this study is to report the prevalence of youth lifetime exposure to suicide attempts by people close to them, and its association with personal nonvictimization adversities, suicidal ideation, thoughts of self-harm, and trauma symptoms.

**Methods:** Data were collected as part of the National Surveys of Children's Exposure to Violence, comprising three cross-sectional studies conducted in 2008, 2011, and 2014 in the U.S. assessing the experiences of children ages 1 month to 17 years. The current analyses utilized the self-report data from youth, ages 10–17 years ( $n=6,366$ ), and was analyzed in 2017.

**Results:** Twelve percent ( $n=779$ ) of youth said someone close to them had tried to kill themselves. Exposure varied by age: 4% of youth aged 10–12 years, 13% of youth aged 13–15 years, and 21% of youth aged 16–17 years reported such exposure. Exposure to suicide attempts also varied by sex with 8% of males and 16% of females reporting this experience. After adjusting for the total number of other types of adversity experienced, the association between exposure to suicide attempts and trauma symptoms ( $\beta=0.5$ , 95% CI=0.3, 0.7,  $p\leq 0.001$ ); suicidal ideation (OR=2.4, 95% CI=1.4, 4.1,  $p\leq 0.001$ ); and thoughts of self-harm (OR=3.1, 95% CI=1.9, 5.1,  $p\leq 0.001$ ) remained significant, although attenuated.

**Conclusions:** Study findings that youth exposure to suicidal behavior is associated with negative emotional distress, and that it often co-occurs with other adversities and social risk factors, highlight the need to better understand the causal pathways among these risk factors to improve youth suicide prevention and response interventions.

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### INTRODUCTION

In the U.S., 44,193 people (13.26 deaths per 100,000 population) died by suicide in 2015; an additional 505,507 (162.41 per 100,000) people had a nonfatal self-harm injury.<sup>1</sup> Moreover, people often experience serious injury that can have long-term effects on their health, depression, and other mental health problems.<sup>2</sup> Suicidal ideation can be an important risk factor for suicide,<sup>3</sup> defined as thoughts, consideration of, or actual plans for suicide. Age and sex are critical factors in suicide: rates of deaths by suicide increase dramatically in the late teens and continue to rise until the early twenties.<sup>4</sup> Suicide attempts also increase in prevalence through adolescence, peaking between age 16 and 18 years.<sup>3</sup> Rates of suicidal ideation and attempts are higher among females whereas rates of suicide are higher among males.<sup>5,6</sup>

Exposure to suicide attempts is all too common. One study suggests 68% of female and 43% of male high school students in the U.S. report knowing a teen who had died by suicide or attempted suicide.<sup>7</sup> Eighteen percent of adolescents nationally have had a friend who attempted suicide<sup>8</sup> and 9% had a schoolmate die by suicide<sup>9</sup> in the past 12 months. Data suggests that youth exposed to peer suicidal behavior are significantly more likely to report their own suicidal ideation

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and attempts.<sup>10,11</sup> Indeed, data from three waves of the National Longitudinal Study of Adolescent Health suggest that suicide attempts of family and friends trigger new suicidal thoughts.<sup>12</sup> These findings indicate that females are more vulnerable to suicide attempts by people close to them than males. Similar 2-year prospective results were found with the National Longitudinal Survey of Children and Youth with relationships between suicide exposure by a schoolmate and personal suicidal ideation and attempt remaining even after adjusting for previous depression and anxiety, drinking in the past month, and previous drug use for youth aged 14–15 years.<sup>9</sup>

However, the above-mentioned studies do not take into account the variety of other types of adversity youth may be experiencing. Childhood adversities, such as parental substance use, chronic parental discord, and parental imprisonment, cluster together,<sup>13,14</sup> and it is likely that exposure to suicide attempts may be only one of a cluster of adversities that could influence personal suicidal ideation and mental health.

Using pooled data from three cross-sectional national samples of youth, ages 10–17 years in the U.S., this study examines the prevalence of youth exposure to suicide attempts by people close to them, and its association with youth's experiences of other nonvictimization adversities and chronic stressors, suicidal ideation, self-harm, and trauma symptoms.

## METHODS

The National Surveys of Children's Exposure to Violence (NatSCEV) comprised three cross-sectional studies conducted in 2008, 2011, and 2014, which assessed the experiences of children aged 1 month to 17 years. A short interview was conducted with an adult caregiver in each household to obtain family demographic information. One child was randomly selected from all eligible children by selecting the child with the most recent birthday. If the selected child was aged 10–17 years, the main telephone interview was conducted with the child. If the selected child was under age 10 years, proxy interviews were conducted by the caregiver "who was most familiar with the everyday experiences of the child."

### Study Sample

The 2008 sample was obtained from a nationwide sampling frame of residential telephone numbers from which a sample of households was drawn by random-digit dialing, including an over-sampling of U.S. telephone exchanges that had a population of  $\geq 70\%$  of African American, Hispanic, or low-income households. For the 2011 and 2014 years of data collection, a sampling frame was constructed using four sources: (1) an address-based sample of households; (2) a prescreened sample of households with children from recent national random-digit-dialing surveys; (3) a listed landline sample (with a known child in the household); and (4) cell phone numbers drawn from a targeted random-digit-dialing

sample frame. To ensure that the estimates derived from the combined frames were representative of the target population of children in the U.S. aged  $\leq 17$  years, sample weights were applied to adjust for the differential probability of selection due to (1) study design; (2) demographic variations in nonresponse; and (3) variations in within-household eligibility.<sup>15</sup> More information about the sample and weighting is available from the authors.

The analysis presented here uses pooled data from these three nationally representative samples (total sample size of 13,052; analytic sample size of 6,366).

## Measures

Those sampled by address received a pre-notification letter with a household screening form enclosed. Eligible households who returned the screener received a \$5 check, with the promise of an additional \$20 after the full telephone interview was completed. Households sampled by phone were recruited only when reached by phone and also received the \$20 incentive for completing the interview. Interviews averaged about 50 minutes in length and were conducted in English or Spanish. Respondents who disclosed a situation of serious threat or ongoing victimization were re-contacted by a clinical member of the research team, trained in telephone crisis counseling, whose responsibility was to provide them with contact information for support in their local community. All study materials were reviewed and approved by the University of New Hampshire's IRB.

Exposure to suicide attempts is part of the adversity scale developed by Turner and colleagues<sup>17,18</sup> described below. Youth were asked, *Has someone close to you ever tried to kill him- or herself on purpose (like by shooting or cutting him- or herself, or taking too many pills or drugs)?* Response options were *yes/no*.

Personal suicidal ideation and thoughts of self-harm were drawn from the Trauma Symptom Checklist for Children.<sup>16</sup> Specifically, youth were asked, *In the last month, how often have you been wanting to kill yourself?* and *In the last month, how often have you been wanting to hurt yourself?* Response options were *never, sometimes, often, and very often*. These two items were each recoded to reflect any versus none in the past month.

Childhood adversity was assessed with items asking about 15 nonviolent adverse events and chronic stressors, 13 of which were taken from a scale developed by Turner et al.<sup>17,18</sup> and two of which were constructed for NatSCEV. Nonviolent adversities included events, such as serious illnesses and parental imprisonment, whereas chronic stressors included things like substance use disorder in family members and homelessness. The childhood adversity index has shown good construct validity across a number of studies, including significant associations with depressive symptoms and anger/aggression in adolescents<sup>17</sup> and with subsequent stressors, family support, and self-esteem in young adulthood.<sup>18</sup>

Trauma symptoms were measured through the use of trauma symptom scores for the anger, depression, and anxiety subscales of the Trauma Symptom Checklist for Children.<sup>16</sup> The instrument was designed to evaluate children's responses to unspecified traumatic events in different symptom domains. Youth were asked to indicate how often they have experienced each symptom within the last month. Response options are on a 4-point scale from 0 (*not at all*) to 4 (*very often*). The instrument has demonstrated good reliability and validity in both clinical- and population-based

samples.<sup>16</sup> Overall trauma score was calculated minus the one item indicating suicidal ideation and the one item indicating thoughts of self-harm.

Demographic information was obtained in the initial caretaker interview, including the child's sex, age, race/ethnicity, and SES. Family structure, defined by the composition of the household, was categorized into four groups: children living with (1) two biological or adoptive parents; (2) one biological parent plus partner (spouse or non-spouse); (3) single biological parent; and (4) other non-parent caregiver.

## Statistical Analysis

Using Stata SE, version 14, lifetime and past-year prevalence of exposure to suicide attempts, both overall and by child demographics, were explored. Child demographic characteristics were compared between youth who were and were not exposed to suicide attempts using Design-based *F* statistics, which is a method of conducting chi-square tests that take survey weights into account and generate a *p*-value reflecting the complex design.

Next, exposure to other forms of nonvictimization adversity and chronic stressors were examined between youth with and without suicide exposure using Design-based *F* statistics. Significant results were adjusted for multiple comparisons using the Bonferroni correction. Next, the bivariate relationships between suicide attempt exposure and trauma symptoms, suicidal ideation, and thoughts of self-harm for all youth, as well as for females and males separately, were compared. Finally, a series of linear (trauma symptom score) and logistic (suicidal ideation, thoughts of self-harm) regressions were conducted to examine the impact of exposure to suicide attempts on these outcomes both with and without adjusting for the total number of lifetime adversities experienced; child demographic characteristics were also adjusted for in these models. Data were analyzed in 2017.

## RESULTS

Twelve percent ( $n=779$ ) of youth aged 10–17 years said someone close to them had tried to kill themselves; 6% ( $n=403$ ) of youth reported such exposure in the past year. Exposure varied by age: 12% of exposed youth were aged 10–12 years, 42% were aged 13–15 years, and 46% were aged 16–17 years (Table 1). Exposure to suicide attempts also varied by sex with more females (65%) than males (35%) reporting this experience. No significant differences by race or ethnicity, household income, or family structure were found.

Four percent ( $n=291$ ) of all youth reported thoughts of suicide in the past month (Table 2). Females were significantly more likely than males to have past thoughts of suicide (5% vs 3%, Design-based  $F=7.13$ ,  $p=0.008$ ). Seven percent ( $n=502$ ) of all youth reported thoughts of self-harm in the past month with sex differences noted: 9% of females and 6% of males reported such thoughts (Design-based  $F=11.28$ ,  $p\leq 0.001$ ). Mean trauma symptom score for all youth was  $-0.003$  ( $SE=0.02$ ) with sex differences noted: a mean of 0.12 ( $SE=0.04$ ) for females

and a mean of  $-0.12$  ( $SE=0.03$ ) for males ( $F=25.19$ ,  $p<0.001$ ).

Youth with exposure to suicide attempts had more overall adversity exposure, with an average of 5.3 ( $SE=0.16$ ) types of adversity experienced in their lifetime compared with 2.4 ( $SE=0.05$ ) types of adversity experienced by youth without suicide attempt exposure (Design-based  $F=291.46$ ,  $p\leq 0.001$ ; Table 3). Statistically significant differences were also noted between these two groups on any adversity exposure and most individual types of adversity examined, with particularly large differences in the experience of having caregivers “always arguing” and having a family member who “used alcohol or drugs so often it caused problems.”

Exposure to a suicide attempt by someone close was significantly related to increased odds of recent personal suicidal ideation, thoughts of self-harm, and trauma symptoms (Table 4). Further adjusting for the total number of other types of adversity experienced attenuated the association between exposure to suicide attempts  $\times$  trauma symptoms ( $\beta=0.5$ , 95% CI=0.3, 0.7,  $p\leq 0.001$ ); suicidal ideation (OR=2.4, 95% CI=1.4, 4.1,  $p\leq 0.001$ ); and thoughts of self-harm (OR=3.1, 95% CI=1.9, 5.1;  $p\leq 0.001$ ), yet each remained significant independent predictors.

Overall, findings regarding the influence of exposure to suicide attempts on personal thoughts of suicide, self-harm, and trauma symptoms were similar for females and males (Table 4). For all youth, the associations remained significant but were attenuated when adjusting for the total amount of lifetime adversity experienced. One exception was the association between exposure to suicide attempts and suicidal ideation among males where the significant association became nonsignificant after adjusting for total adversity.

## DISCUSSION

Drawing data from the three cross-sectional NatSCEV studies, more than one in eight youth, ages 10–17 years, experienced someone close to them who attempted suicide. More females (about one in six) than males (about one in 12) reported at least one suicide attempt exposure. Exposure to suicide attempts was associated with a range of other adversities for children. Most notably, family drug and alcohol problems and parental conflict were strongly associated with youth exposure to suicide attempts, suggesting that these types of adverse family contexts often co-occur with the exposure to suicidal behavior within youth's social networks. Nonetheless, even when the higher rates of co-occurring adversities are taken into account, exposure to a suicide attempt had an independent effect on past-month trauma

**Table 1.** Characteristics of Youth, Ages 10–17 Years (n=6,366), by Lifetime Suicide Attempt Exposure

Child characteristic	All youth % (n), <sup>a</sup> (n=6,366)	No suicide attempt exposure, % (n) (n=5,587)	Suicide attempt exposure, % (n) (n=779)	Design-based F
Child sex				
Male	51 (3,248)	53 (2,943)	35 (305)	<b>30.97</b>
Female	49 (3,118)	47 (2,644)	65 (474)	
Child age, years				
10–12	35 (1,942)	38 (1,868)	12 (74)	<b>37.94</b>
13–15	38 (2,562)	38 (2,234)	42 (328)	
16–17	26 (1,862)	24 (1,485)	46 (377)	
Race and ethnicity				
White, non-Hispanic	59 (4,298)	59 (3,736)	63 (562)	0.86
Black, non-Hispanic	15 (842)	15 (760)	12 (82)	
Other race, non-Hispanic	7 (307)	7 (262)	8 (45)	
Hispanic, any race	19 (893)	19 (806)	17 (87)	
Household income				
<\$20,000	19 (1,310)	19 (1,173)	18 (137)	1.17
\$20,000–\$49,999	22 (1,389)	22 (1,199)	27 (190)	
\$50,000–\$74,999	18 (992)	18 (854)	19 (138)	
\$75,000–\$99,999	13 (976)	13 (855)	13 (121)	
≥\$100,000	27 (1,699)	28 (1,506)	22 (193)	
Family structure				
Two biological/adoptive parents	55 (4,179)	56 (3,706)	49 (473)	1.64
Parent and step-parent	12 (616)	11 (522)	14 (94)	
Single parent	29 (1,297)	29 (1,121)	32 (176)	
Other adult caregiver	4 (274)	4 (238)	6 (36)	

Note: Boldface indicates statistical significance ( $p < 0.001$ ).

<sup>a</sup>All percentages are weighted; n's are unweighted.

symptoms, suicidal ideation, and thoughts of self-harm by youth. Current findings support past research indicating that youth exposed to peer suicidal behavior are significantly more likely to have their own suicidal ideation and attempts.<sup>10,11</sup>

The study found differences in exposure for males and females. This finding may reflect sex differences in the composition and qualities of adolescent social networks, together with the greater prevalence of suicidal ideation among female teenagers (friends of respondents). Indeed, adolescent girls tend to have more close friendships, most often same-sex friends, and report more intimacy and disclosure in their network relationships than do boys.<sup>19,20</sup> As a result, girls may have larger numbers of network members whom they perceive as “close,” and they may be more aware of and affected by events that occur within those networks. Given higher rates of suicidal ideation among girls,<sup>5,6,21</sup> it seems likely that girls may be exposed to suicide attempts by close network members.

Results also found that the prevalence of exposure to suicide attempts increased with age, which is likely, in part, due to increased opportunity for lifetime exposure

as youth get older. However, given that suicide attempts also increase in prevalence through adolescence, peaking between ages 16 and 18 years,<sup>3</sup> the positive association between exposure and age may also be because of increases in suicide attempts by similar-age peers among the older teens.

The findings from the study suggest exposure to a suicide attempt by someone close appears to be a risk factor for trauma symptoms, suicidal ideation, and thoughts of self-harm. Those who are exposed to another's suicide attempt should therefore be monitored for the emergence of such issues. It also identifies a need for more research on pathways from suicide attempt exposure to suicidal behavior in youth. The concept of suicide contagion, a process by which exposure to the suicide or suicidal behavior of someone influences others to die by suicide or attempt suicide, has been discussed in the suicide literature.<sup>22</sup> However, the concept of suicide contagion has evolved and is considered one explanation for apparent suicide clusters.

The study findings also highlight that suicidal ideation and behaviors by those close to youth often co-occur

**Table 2.** Bivariate Relationships Between Lifetime Exposure to Suicide Attempts and Child Experience by Sex

Variable	All youth (n=6,366)			Females (n=3,118)			Males (n=3,248)		
	All youth, % (n) <sup>a</sup>	No suicide exposure, % (n) <sup>a</sup>	Design-based F	No suicide exposure, % (n)	Design-based F	No suicide exposure, % (n)	Design-based F	No suicide exposure, % (n)	Design-based F
Trauma symptom score (M, SE) <sup>b</sup>	-0.003 (0.02)	-0.12 (0.02)	<b>110.55</b>	-0.05 (0.03)	<b>64.61</b>	-0.18 (0.03)	<b>61.73</b>	0.63 (0.10)	<b>61.73</b>
Suicidal ideation	4 (291)	3 (182)	<b>65.69</b>	3 (97)	<b>45.47</b>	3 (85)	<b>13.25</b>	8 (33)	<b>13.25</b>
Thoughts of self-harm	7 (502)	5 (338)	<b>89.62</b>	6 (190)	<b>53.69</b>	5 (148)	<b>26.81</b>	19 (49)	<b>26.81</b>

Note: Boldface indicates statistical significance ( $p < 0.001$ ).

<sup>a</sup>All percentages are weighted; n's are unweighted.

<sup>b</sup>Excluding suicidal ideation and thoughts of self-harm.

with a large number of influential adversities that themselves are associated with youth mental health and suicidal ideation. It is important that research on suicide and suicidal ideation take into account that many exposed youth are experiencing additional situational stressors, such as parental conflict or illness at home, and family drug and alcohol use disorders. Generally, many of the adversity and stressors that affect children's physical and mental health occur within the family context, influencing the mental health of all family members in an interactive and accumulating way. Research has shown that chronic stress is associated with reduced parental psychological functioning,<sup>23</sup> increased family alcohol and drug use,<sup>24</sup> and greater frequency of partner conflict and conflict with children.<sup>25</sup> In fact, the concept of "linked lives" that has been applied to stressors experienced by families<sup>26</sup> could also potentially be applied to peer cohorts, where peer groups experiencing high rates of bullying, school violence, negative social pressures, or substance use, for example, could see interactive cycles of stress and mental health problems, such as suicidal ideation and behavior, that affect the group climate.

This study was not able to determine causal pathways between exposure to suicide attempts and personal mental health. Yet, regardless of the causal patterns involved, findings suggest that prevention and treatment strategies might increase their impact by focusing more broadly. Most suicide prevention and intervention programs incorporate strategies that focus on the individual youth who may be at risk for suicide (e.g., awareness and education, screening, treatment interventions, and means restrictions).<sup>27</sup> There could be substantial benefit to building prevention strategies that focus collectively on youth social and peer groups. In the past decade, youth violence prevention programs have begun to shift some of the focus of educational messages and skill-building strategies to potential bystanders (e.g., friends, peers).<sup>28</sup> There is a growing body of research to suggest that bystander-focused prevention initiatives can lead to a reduction in violence among youth.<sup>29,30</sup> Because research indicates that adolescents who are thinking about suicide are more likely to seek and receive help from their friends rather than other sources,<sup>31</sup> this might be an opportunity for suicide prevention and intervention.

### Limitations

It is not possible to determine with certainty the order of events. The measures for exposure to suicide attempts and personal suicidal ideation and thoughts of self-harm were simple measures; more comprehensive assessments of these experiences are needed to further the knowledge base about the impact of such exposures on youth. It is

**Table 3.** Association Between Exposure to Suicide Attempt and Other Non-victimization Adversities Among All Youth

Adversity type	Any, % (n) <sup>a</sup> (n=6,366)	No suicide exposure, % (n) (n=5,587)	Suicide exposure, % (n) (n=779)	Design-based F
Any lifetime adversity	86 (5,441)	84 (4,662)	100 (779)	<b>45.34***</b>
Someone close had illness	48 (3,065)	45 (2,549)	69 (516)	<b>53.53***</b>
Someone close died	45 (2,922)	43 (2,442)	63 (480)	<b>31.03***</b>
Someone close had bad accident	42 (2,496)	40 (2,061)	57 (435)	<b>23.95***</b>
Caregiver lost job	24 (1,399)	22 (1,110)	39 (289)	<b>34.58***</b>
Caregivers always arguing	20 (1,203)	17 (922)	40 (281)	<b>70.17***</b>
Had bad illness	19 (1,163)	17 (944)	34 (219)	<b>35.77***</b>
Family members' drug/alcohol overuse	13 (827)	10 (574)	37 (253)	<b>144.56***</b>
Someone close attempted suicide	12 (779)	–	–	–
In a bad accident	11 (638)	10 (523)	16 (115)	<b>7.69**</b>
In a bad natural disaster	10 (626)	9 (498)	15 (128)	<b>11.99***</b>
Caregiver went to prison	10 (518)	9 (408)	18 (110)	<b>21.12***</b>
Repeat school year	9 (548)	8 (459)	15 (89)	<b>13.57***</b>
Caregiver in war	8 (473)	8 (404)	9 (69)	<b>0.32</b>
Taken away from family	4 (229)	3 (170)	8 (59)	<b>18.43***</b>
Lived on street/shelter	3 (147)	3 (114)	6 (33)	<b>6.75**</b>
Average number of other adversities (M, SE)	2.8 (0.05)	2.4 (0.05)	5.3 (0.16)	<b>291.46***</b>

Note: Boldface indicates statistical significance (\*\* $p < 0.01$ ; \*\*\* $p < 0.001$ ).

<sup>a</sup>All percentages are weighted; n's are unweighted.

**Table 4.** Associations Between Lifetime Suicide Attempt Exposure and Past Month Trauma Symptoms Among Youth

Lifetime suicide attempt exposure	Trauma symptoms, <sup>a,b</sup> $\beta$ (SE)	Suicidal ideation, <sup>a</sup> AOR (95% CI)	Thoughts of self-harm, <sup>a</sup> AOR (95% CI)
All youth			
Without total adversity	<b>0.9 (0.7, 1.1)***</b>	<b>4.1 (2.6, 6.3)***</b>	<b>4.8 (3.2, 7.3)***</b>
With total adversity	<b>0.5 (0.3, 0.7)***</b>	<b>2.4 (1.4, 4.1)**</b>	<b>3.1 (1.9, 5.1)***</b>
Females			
Without total adversity	<b>1.0 (0.7, 1.2)***</b>	<b>4.9 (2.7, 8.8)***</b>	<b>5.1 (3.0, 8.6)***</b>
With total adversity	<b>0.5 (0.3, 0.9)***</b>	<b>2.8 (1.3, 5.8)**</b>	<b>3.2 (1.7, 5.8)***</b>
Males			
Without total adversity	<b>0.8 (0.6, 1.0)***</b>	<b>2.8 (1.5, 5.3)**</b>	<b>4.3 (2.1, 8.7)***</b>
With total adversity	<b>0.3 (0.1, 0.5)***</b>	1.7 (0.9, 3.2)	<b>2.8 (1.1, 7.4)*</b>

Note: All models adjust for youth age, race and ethnicity, household income, and family structure (and sex for the models run with all youth). Boldface indicates statistical significance (\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ ).

<sup>a</sup>Past month.

<sup>b</sup>Calculated excluding suicidal ideation and thoughts of self-harm.

unknown whether the exposure came from a family member or a friend. Differential effects may be found when examining exposure from these sources as well as based on the degree of closeness to the individual. The exposure to suicidal behavior is not specific to suicide attempts versus suicide deaths. Finally, the NatSCEV data did not have any information on the length of time between the exposure and participating in the survey.

## CONCLUSIONS

Exposure to a suicide attempt by someone close appears to be a risk factor for trauma symptoms, suicidal

ideation, and thoughts of self-harm. Findings also provide support for the idea that youth exposure to suicidal behavior often occurs in a context in which multiple adversities and social risk factors are present, such as family substance use disorder and parental conflict. It is important to better understand the associations and causal pathways among these risk factors to improve youth suicide prevention and response interventions.

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