Durkheim's Theory of Social Integration and Suicide Revisited: Is It Diversity of Social Networks or Perceived Strength of Social Support That Matters?

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ABSTRACT

Objective: Poor social support is a robust predictor of suicidal thoughts and behaviors (STB). However, little is known about which components of social support (ie, diversity of social networks and perceived strength of social support) may play a protective role for STB.

Methods: We analyzed data from the 2012–2013 National Epidemiologic Survey on Alcohol and Related Conditions Wave III to examine whether diversity of social networks or perceived strength of social support was inversely associated with lifetime STB (ie, suicidal ideation and suicide attempts). Multivariable-adjusted analyses examined the independent association between components of social support and STB, while accounting for sociodemographic, clinical, and behavioral covariates.

Results: Among adults with a history of suicide attempt, the majority reported low diversity/high perceived support (48.5%), followed by high diversity/high perceived support (36.0%). Similar patterns were found among adults with lifetime suicidal ideation. In multivariable-adjusted analyses, greater social network diversity was associated with a lower relative risk (RR) of suicidal ideation (RR = 0.83; 95% confidence interval [CI], 0.75–0.83) and attempt (RR = 0.79; 95% CI, 0.67–0.94). While greater perceived strength of social support was linked to a lower risk of suicide attempt (RR = 0.81; 95% CI, 0.68–0.97), such an association was not observed for ideation.

Conclusions: Greater diversity of social networks was more strongly associated with lower risks of suicidal ideation and attempt than perceived strength of social support. Psychosocial interventions to enhance the diversity of social networks may be a source to mitigate risks for STB, but further research is warranted.

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More than 3 decades ago, House and colleagues[1] published a seminal article on the association between social support and health. Since then, an abundance of research has shown that social support is associated with improved quality of life and longer life expectancy.[2–5] In addition, previous studies have demonstrated that lack of social support is a strong risk factor for all-cause mortality rates across numerous medical conditions, including cardiovascular diseases, cancer, and infectious diseases.[2–5]

Research on psychiatric disorders has also revealed that social support is strongly associated with improved outcomes. In a recent systematic review of 34 studies, lower social support was prospectively linked to worse symptom severity, recovery outcomes, and social functioning in individuals with depression.[4] Although less robust, preliminary evidence suggests that poor social support is associated with adverse mental health outcomes, such as greater severity of depressive symptoms and longer time to recovery in individuals with schizophrenia, bipolar disorder, and anxiety disorders.[4]

Traditionally, the link between social support and suicidal behaviors has been a core element of theories of suicide. For example, the early foundational theory of suicide by Durkheim suggested that an individual's degree of social integration is inversely associated with suicidal behaviors.[6,7] More contemporary models such as Joiner's interpersonal theory of suicide have underscored the role of thwarted-belongingness in suicide risk, a concept characterized by perceived lack of social connection and support by others.[8] Following such theories, numerous studies have identified a strong association between social support and suicidal behaviors.[9–11] For example, in a study of a nationally representative sample of adults 17 years or older, greater social support was associated with decreased odds of lifetime suicide attempt even after accounting for major risk and protective factors of suicidal behavior.[9] Further, such associations were found in adolescents,[12] college students,[13] and older adults.[14] More recently, the National Academies of Science, Engineering, and Medicine reported that social isolation is associated with suicide risk.[15] To date, however, few studies have investigated which components of social support have the greatest association with suicidal thoughts and behaviors (STB) (ie, suicidal ideation and suicide attempts).

There are 2 commonly measured components of social support[16]: (1) structure of social support (ie, size and

Clinical Points

- Little is known about which components of social support (ie, diversity of social networks and perceived strength of social support) may play a protective role for suicidal thoughts and behaviors (STB).
- Greater diversity of social networks was more strongly associated with lower risks of STB than perceived strength of social support.
- Psychosocial interventions to enhance the diversity of social networks may be a source to mitigate risks for STB.

diversity of social roles) and (2) quality of social support (ie, perceived and actual support received from members within the social network).[7,16] Previously, greater social network diversity (ie, the number of unique roles that a person assumes in their social network) has been associated with lower risk for depression and anxiety.[17–19] Further, several studies have shown that a higher level of perceived support mitigates the severity of mental distress and depression, as well as other physical health issues.[20,21] While both constructs are important aspects of social functioning, several studies have suggested that diversity of social networks may be more important than perceived strength of social support in relation to different health outcomes, including depression, posttraumatic stress disorder (PTSD), and cardiovascular disease.[16,22–24] However, the association between each construct and STB remains to be elucidated, including whether social network diversity or the perceived strength of social support is more strongly associated with STB.

To address these gaps, we analyzed nationally representative data from the National Epidemiologic Survey on Alcohol and Related Conditions Wave III (NESARC-III) to answer the following questions: (1) How does history of STB relate to current perceptions of social support (ie, diversity of social networks and strength of social support)? (2) Which components of social support are significantly associated with suicidal ideation and suicide attempts when controlling for other covariates? We hypothesized that the diversity of social networks may be more important than the quality of perceived social support in relation to suicidal ideation and suicide attempts because quality of social support depends on active, diverse social network structure.[20,25] Improving understanding of which specific components of social support are most associated with reduced STB may help inform suicide prevention.

METHODS

Data Source and Study Sample

We analyzed data from NESARC-III,[26,27] which is sponsored by the National Institute on Alcohol Abuse and Alcoholism (NIAAA). NESARC-III is a nationally representative survey, conducted between April 2012 and June 2013, which collected comprehensive information regarding physical and mental health diagnoses, well-being, and disabilities among non-institutionalized civilian adults aged 18 years or older with a focus on alcohol and other substance use disorders.[27,28] We included 36,309 survey participants aged 18 or older. We grouped our sample into 4 groups on the basis of scores on measures of social support, which were the primary independent variables: (1) low diversity/low perceived strength (n = 2,597 unweighted); (2) high diversity/low perceived strength (n = 2,274 unweighted); (3) low diversity/high perceived strength (n = 15,394 unweighted); and (4) high diversity/high perceived strength (n = 16,014 unweighted). Further details of the survey, including descriptions, questionnaires, sampling methodology (including power calculations[27]) and datasets, are available on the NESARC-III website.[26] The study procedures for this secondary analysis of restricted data were approved by the Institutional Review Board (#2000022543) at Yale School of Medicine.

Measures

Diversity of social networks. NESARC-III uses the 12-item Social Network Index (SNI), measuring an individual's quantity and type of social relationships in the past 2 weeks (eg, spouse, parent, child, friend, employee, and community volunteer).[29,30] The SNI is designed to capture 3 different aspects of one's social networks: (1) number of regular social roles; (2) number of different network domains (eg, family, friends, work, and church/temple); and (3) overall number of people in the network. Based on previous studies,[16,18,31] we focused on the number of regular social roles, which ranged from 0 to 12, as a measure of social role diversity. The SNI has demonstrated fair reliability (Cronbach α, 0.64–0.70).[32] In our sample, the median number of total social roles reported was 4. We then constructed a binary variable of diversity of social connections as low (≤ 4) and high (> 4).[16,25]

Perceived strength of interpersonal social support. NESARC-III administered the 12-item Interpersonal Support Evaluation List (ISEL-12) to measure perceived strength of interpersonal support.[29] Survey participants were asked to respond to 12 statements (eg, "If I were sick, I could easily find someone to help me with my daily chores"), and responses were on a 4-point scale from definitely false (0) to definitely true (3). The ISEL-12, with scores ranging from 0 to 36, is widely used and has demonstrated excellent reliability (Cronbach α, 0.81–0.90).[19,33] In our sample, the median number was 18. We then constructed a binary variable of perceived strength of interpersonal social support as low (≤ 18) and high (> 18).[16,25]

Lifetime suicide attempts. Lifetime suicide attempts were assessed with the question: "In your entire life, did you ever attempt suicide?" followed by questions addressing age at first attempt, age at the most recent attempt, and the total number of lifetime attempts. Number of years since most recent attempt was calculated by subtracting the age at most recent attempt from current age.

Table 1. Sociodemographic Characteristics of US Adults by Lifetime Suicidal Ideation and Behavior[a]

	No suicidal behavior (1)	Suicidal ideation (2)	Suicide attempt (3)	Bivariate multinomial comparison (2) vs (1) RR (95% CI); *P*	Bivariate multinomial comparison (3) vs (1) RR (95% CI); *P*
Sample size					
Unweighted sample	30,534	3,780	1,995		
Weighted population	198,422,995	24,881,426	12,107,535		
Age, mean ± SD, y	46.9 ± 18.1	45.6 ± 16.0	42.3 ± 15.4	1.00 (1.00–1.00); < .001	0.98 (0.98–0.99); < .001
Female sex, %	50.0	59.7	66.5	1.48 (1.37–1.60); < .001	1.99 (1.75–2.25); < .001
Race/ethnicity, %					
Non-Hispanic white	65.0	73.1	70.9	Reference	Reference
Non-Hispanic black	12.2	9.9	9.8	0.73 (0.64–0.82); < .001	0.74 (0.63–0.87); < .001
Hispanic	15.2	11.5	14.0	0.67 (0.60–0.75); < .001	0.85 (0.71–1.01); .063
Other[b]	7.6	5.5	5.3	0.64 (0.54–0.77); < .001	0.64 (0.50–0.83); .001
Marital status, %					
Married	36.5	77.2	44.7	Reference	Reference
Never married	6.0	0.7	5.5	1.26 (1.15–1.39); < .001)	1.59 (1.36–1.86); < .001
Other[c]	57.5	22.0	53.8	1.59 (1.45–1.76); < .001)	2.11 (1.83–2.44); < .001
Household income, %					
< $20,000	21.5	26.1	37.3	Reference	Reference
$20,000–$39,999	23.9	24.3	27.1	0.84 (0.76–0.92); .001	0.65 (0.56–0.75); < .001
≥ $40,000	54.6	49.6	35.6	0.75 (0.68–0.83); < .001	0.38 (0.33–0.43); < .001
Employed, %	70.5	69.2	63.5	0.94 (0.85–1.04); .200	0.73 (0.65–0.81); < .001
Education, %					
< High school	13.1	10.6	16.7	Reference	Reference
High school or equivalent	25.5	26.2	29.0	1.27 (1.08–1.48); .003	0.89 (0.75–1.06); .183
Some college	32.4	35.3	38.7	1.34 (1.16–1.56); <.001	0.94 (0.79–1.11); .438
≥ Bachelor's degree	29.0	27.9	15.6	1.19 (1.01–1.40); .036	0.42 (0.35–0.51); < .001
Uninsured, %	17.5	15.4	20.6	0.85 (0.77–0.95); .003	1.22 (1.08–1.37); .002
Urban residence, %	78.8	78.8	77.9	1.00 (0.88–1.13); .980	0.95 (0.78–1.15); .582
Social support, %					
Low diversity/low perceived strength	6.3	7.7	8.2	Reference	Reference
High diversity/low perceived strength	6.9	7.0	7.3	0.83 (0.66–1.05); .117	0.82 (0.59–1.13); .222
Low diversity/high perceived strength	37.0	43.4	48.5	0.96 (0.82–1.11); .547	1.01 (0.82–1.24); .929
High diversity/high perceived strength	49.8	41.9	36.0	0.69 (0.59–0.81); < .001	0.56 (0.45–0.69); < .001

[a]Data are from National Epidemiologic Survey on Alcohol and Related Conditions Wave III.[23,24]
[b]Includes non-Hispanic Asian and other racial/ethnic groups.
[c]Includes divorced, separated, widowed, partnered, or other.

Lifetime suicidal ideation. Lifetime suicidal ideation was based on the following 2 survey questions: "Did you think about committing suicide or killing yourself" and "Did you think a lot about your own death?"

Sociodemographic characteristics. Sociodemographic information surveyed in NESARC-III included the following categorical variables: age, sex, race/ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic, or non-Hispanic other), marital status (married, never married, or other), imputed household income (< $20,000, $20,000–39,999, or ≥ $40,000), employment (yes or no), educational attainment (< high school, high school or equivalent, some college, or ≥ bachelor's degree), insurance coverage (yes or no), and urbanicity (rural or urban residence).

Psychiatric and substance use disorders. NESARC-III utilized the Alcohol Use Disorder and Associated Disabilities Interview Schedule to assess *DSM-5* diagnostic criteria for past-year diagnoses of major depressive disorder, persistent depressive disorder, generalized anxiety disorder, and PTSD.[34–38] We constructed the number of past-year psychiatric disorders using such information. Three lifetime *DSM-5* personality disorders (ie, antisocial, borderline, and schizotypal) were also assessed. For substance use disorders, we included past-year *DSM-5* alcohol use disorder and other substance use disorders (ie, cannabis, cocaine, opioid, stimulant, sedative, hallucinogen, inhalant, or club drug use).

Medical comorbidities. Respondents were asked whether they had 14 medical conditions (eg, arthritis, diabetes, and insomnia) (yes or no) in the past 12 months. Among those who responded positively, they were further asked, "Did a doctor or health professional tell you that you had [a medical condition]?" Those responding "yes" to both questions were categorized as having the medical condition in question.[34] Using these variables, we further constructed an ordinal count variable representing the number of chronic conditions (0, 1, 2–4, or ≥ 5). We also included self-reported pain in the past 4 weeks dichotomized as "quite a bit/extremely" versus "moderately/a little bit/never."[35–37]

Behavioral histories/experiences. Survey participants were asked about the importance of their religious beliefs, with 4 possible responses, from which we created a dichotomous variable ("very/somewhat important" versus "less or not important") to indicate religiosity.[39] We also considered adverse childhood experiences based on parental histories (eg, alcohol/problem drinker, drug user, incarceration, hospitalization due to mental illness,

Table 2. Clinical and Behavioral Characteristics of US Adults by Suicidal Ideation and Behavior[a]

	No suicidal behavior (1)	Suicidal ideation (2)	Suicide attempt (3)	Bivariate multinomial comparison (2) vs (1) RR (95% CI); *P*	Bivariate multinomial comparison (3) vs (1) RR (95% CI); *P*
Sample size					
Unweighted sample	30,534	3,780	1,995		
Weighted population	198,422,995	24,881,426	12,107,535		
Past-year psychiatric disorder, %					
Any	10.7	55.4	59.6	10.43 (9.47–11.49); <.001	12.39 (11.07–13.87); <.001
Major depressive disorder	5.4	38.2	35.6	10.87 (9.76–12.12); <.001	9.74 (8.59–11.06); <.001
Dysthymia	1.4	13.3	21.4	10.68 (8.88–12.85); <.001	18.94 (15.82–22.69); <.001
Panic disorder	1.7	9.2	13.7	6.00 (5.15–6.98); <.001	9.47 (7.77–11.54); <.001
Generalized anxiety disorder	3.2	15.8	18.9	5.74 (5.04–6.54); <.001	7.14 (6.08–8.39); <.001
Posttraumatic stress disorder	2.3	14.6	23.1	7.34 (6.33–8.51); <.001	12.87 (10.72–15.46); <.001
No. of past-year psychiatric disorders					
None	89.4	44.6	40.4	Reference	Reference
1	8.2	32.2	27.6	7.85 (7.04–8.75); <.001	7.44 (6.61–8.37); <.001
≥2	2.4	23.2	32.0	19.16 (16.57–22.16); <.001	29.18 (24.56–34.68); <.001
Past-year substance use disorder, %					
Alcohol use disorder	12.4	20.3	24.7	1.80 (1.64–1.99); <.001	2.32 (2.05–2.64); <.001
Other substance use disorder	2.8	8.0	12.7	2.97 (2.50–3.52); <.001	5.02 (4.24–5.94); <.001
Lifetime personality disorder, %					
Antisocial personality disorder	2.9	8.7	18.9	3.17 (2.73–3.68); <.001	7.81 (6.42–9.51); <.001
Borderline personality disorder	5.4	30.2	46.7	7.65 (6.86–8.53); <.001	15.49 (13.67–17.56); <.001
Schizotypal personality disorder	3.6	17.7	27.8	5.77 (5.02–6.62); <.001	10.34 (8.97–11.91); <.001
Past-year chronic medical condition, %					
Pain (in the past 4 weeks)	8.7	19.9	25.4	2.60 (2.35–2.89); <.001	3.57 (3.02–4.21); <.001
Any medical comorbidity	58.5	69.6	74.5	1.62 (1.50–1.75); <.001	2.07 (1.80–2.37); <.001
No. of chronic conditions					
None	41.5	30.4	25.5	Reference	Reference
1	25.6	24.3	25.6	1.30 (1.18–1.43); <.001	1.63 (1.40–1.89); <.001
2–4	28.2	34.4	34.2	1.66 (1.51–1.83); <.001	1.97 (1.69–2.28); <.001
≥5	4.7	10.9	14.7	3.14 (2.76–3.56); <.001	5.05 (4.04–6.32); <.001
Behavioral history, %					
Religiosity	83.6	81.6	81.0	0.87 (0.79–0.97); .008	0.84 (0.71–0.99); .040
Parental adverse events					
Alcoholic/problem drinker	20.3	36.5	46.9	2.26 (2.06–2.47); <.001	3.47 (3.10–3.89); <.001
Drug user	4.4	10.0	19.7	2.40 (2.06–2.80); <.001	5.31 (4.50–6.26); <.001
Incarceration	6.2	13.3	21.4	2.33 (2.07–2.63); <.001	4.14 (3.59–4.76); <.001
Hospitalization due to mental illness	4.1	10.4	16.4	2.72 (2.34–3.16); <.001	4.57 (3.92–5.33); <.001
Suicide attempt	2.2	5.9	14.0	2.77 (2.31–3.31); <.001	7.19 (5.94–8.70); <.001
No. of parental adverse events					
Never	74.7	55.6	41.0	Reference	Reference
1	17.8	25.2	28.3	1.91 (1.73–2.11); <.001	2.89 (2.52–3.31); <.001
≥2	7.5	19.2	30.7	3.42 (3.06–3.81); <.001	7.41 (6.52–8.41); <.001
Incarceration history	10.6	17.4	30.3	1.78 (1.57–2.02); <.001	3.65 (3.19–4.17); <.001
Homelessness history	3.6	9.9	22.7	2.91 (2.50–3.38); <.001	7.81 (6.73–9.06); <.001

[a]Data are from National Epidemiologic Survey on Alcohol and Related Conditions Wave III.[23,24]

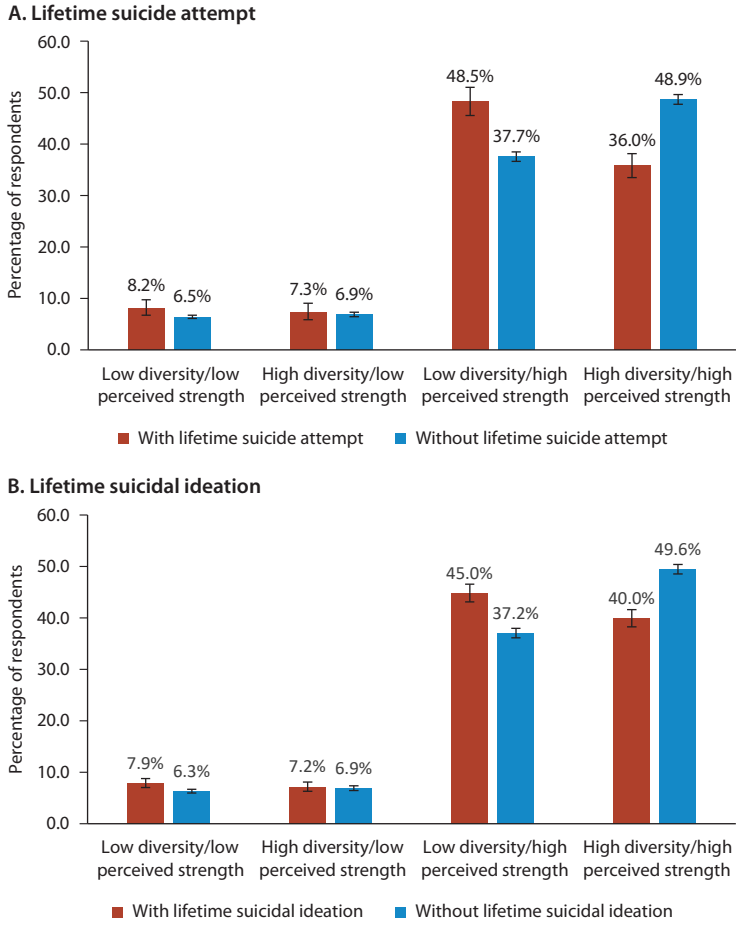
and suicide attempt).[34] Using such information, we created a count variable, indicating the number of adverse parental events (none, 1, or ≥2). In addition, we included the following personal lifetime behavioral experiences: incarceration and homelessness, which were dichotomous.

Data Analysis

First, we tested proportional differences in sociodemographic, clinical, and behavioral characteristics by lifetime STB. We created 3 comparison groups for outcomes of interest: (1) those without lifetime STB (as a reference group); (2) those with only lifetime suicidal ideation; and (3) those with both lifetime suicidal ideation and suicide attempt. We used bivariate multinomial regression analyses to examine how each sociodemographic, clinical, and behavioral characteristic differs between these outcomes of interest. We used Poisson regression models because the outcomes of interest were multinomial; we reported incidence rate ratio and its 95% confidence interval (CI) to compare risk relationships of outcomes of interest by each variable. We also presented bivariate relationships of social support (ie, diversity of social networks and perceived strength of interpersonal social support) with STB.

Second, in multivariable-adjusted Poisson regression analyses, we sought to identify associations between social support and STB, while controlling for other covariates.[40] In our preliminary analyses, we checked model assumptions (eg, multicollinearity and overdispersion for Poisson regression model). All statistical analyses were conducted in Stata MP/6-Core 16.1 and were weighted/accounted

Figure 1. Diversity of Social Networks and Perceived Quality of Interpersonal Social Support Among US Adults by Lifetime Suicidal Ideation and Behavior[a]



[a]Data are from National Epidemiologic Survey on Alcohol and Related Conditions Wave III.[23,24] Whiskers represent 95% confidence intervals.

for NESARC-III survey design (eg, unequal probability of selection, clustering and stratification) using the "svy" commands.[27,41] We used $P < .05$ to indicate statistical significance.

RESULTS

Sociodemographic Characteristics of the Study Sample

In the entire sample of 36,309 adults, 3,780 (10.4%) and 1,995 (5.5%) reported lifetime suicidal ideation and suicide attempt, respectively. The mean age of the total sample was 46.5 (standard deviation = 17.8), and 48.1% were male. In terms of race/ethnicity, 66.2% were non-Hispanic White, 11.8% were non-Hispanic Black, 14.7% were Hispanic, and 7.3% were non-Hispanic other. Those with lifetime suicidal ideation or suicide attempt, relative to those without STB, were more likely to be female, non-Hispanic White, never married, and have an income of < $20,000. They were also less likely to be in the high diversity of social network/high perceived social support group (both $P < .001$) (Table 1).

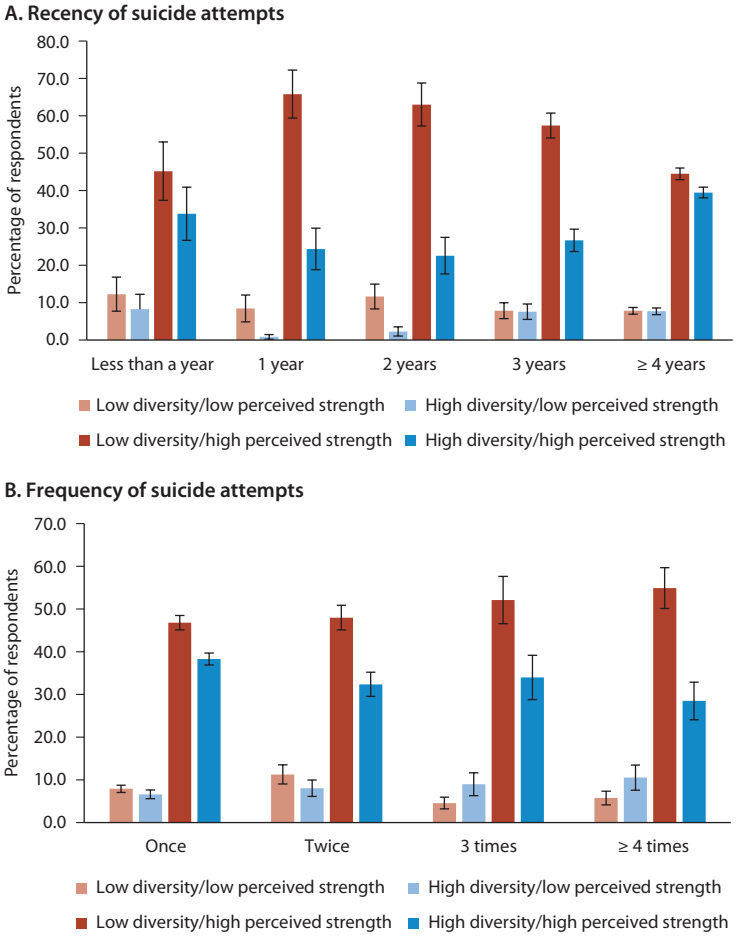
Clinical and Behavioral Characteristics of the Study Sample

With regard to clinical characteristics, those with lifetime suicidal ideation or suicide attempt, relative to those without STB, were more likely to have any past-year psychiatric disorder, substance use disorders, lifetime personality disorders, and past-year chronic medical conditions. With regard to behavioral history, those with lifetime suicidal ideation or suicide attempt were less religious and more likely to report parental adverse events and lifetime history of incarceration as well as homelessness ($P < .001$ for each) (Table 2).

Suicidal Thoughts and Behaviors by Social Support

Figure 1 illustrates lifetime STB by different social support groups. Among adults with a history of suicide attempt, the majority (48.5%) reported having low diversity of social networks but high perceived strength of social support (Figure 1A). Among those without a history of suicide attempt, on the other hand, 48.9% reported having high diversity of social support and high perceived strength

Figure 2. Variation of Diversity of Social Networks and Perceived Quality of Interpersonal Social Support by Timing of Suicide Attempts Among US Adults Who Attempted Suicide[a]



[a]Data are from National Epidemiologic Survey on Alcohol and Related Conditions Wave III.[23,24] Whiskers represent 95% confidence intervals.

of social support. Similar patterns were found in lifetime suicidal ideation (Figure 1B).

Recency and Frequency of Suicide Attempts by Social Support

Figure 2 illustrates recency and frequency of suicide attempts by different social support groups. Those with low diversity of social networks and high perceived strength of social support were the most likely to report a recent suicide attempt within the past 1 to 3 years (Figure 2A). In terms of frequency of suicide attempts, those with low diversity of social networks and high perceived strength of social support were the most likely to report suicide attempts in all counts (Figure 2B).

Multivariable-Adjusted Associations of Social Network Diversity and Social Support Quality With Suicidality

In multivariate analyses (Table 3), greater diversity of social networks was independently associated with a lower likelihood of suicidal ideation (relative risk [RR] = 0.83; 95% confidence interval [CI], 0.75–0.93; $P = .001$) and suicide attempt (RR = 0.79; 95% CI, 0.67–0.94; $P = .007$). Greater perceived strength of social support was also associated with a lower likelihood of suicide attempt (RR = 0.81, 95% CI, 0.68–0.97; $P = .020$) but not suicidal ideation (RR = 0.91; 95% CI, 0.81–1.03; $P = .139$).

DISCUSSION

To our knowledge, this is the first study to examine the associations of diversity of social networks and perceived strength of social support in relation to STB. We found that those who reported low diversity of social networks but high perceived strength of social support were the most likely to report a history of suicide attempt or suicidal ideation. Further, they were the most likely to report suicide attempts within the past 1–3 years and to have multiple suicide attempts. In addition, we found that high diversity of social networks was associated with lower likelihoods of both lifetime suicidal ideation and suicide attempt. Greater perceived quality of social support was linked to lower likelihood of lifetime suicide attempt, but not to suicidal

Table 3. Multivariable-Adjusted Multinomial Regression Analysis for Association Between Social Support and Suicidal Thoughts and Behaviors (STB) in US Adults[a]

Variable (ref group in parentheses)	Suicidal ideation vs no STB RR (95% CI); *P*	Suicide attempt vs no STB RR (95% CI); *P*
Social support		
Diversity of social connections (low)	0.83 (0.75–0.93); .001	0.79 (0.67–0.94); .007
Perceived strength of social support (low)	0.91 (0.81–1.03); .139	0.81 (0.68–0.97); .020
Sociodemographic factors		
Age	1.00 (0.99–1.00); .110	0.98 (0.98–0.99); <.001
Female sex	1.31 (1.20–1.42); <.001	2.13 (1.81–2.49); <.001
Race/ethnicity (non-Hispanic white)		
Non-Hispanic black	0.75 (0.65–0.85); <.001	0.62 (0.53–0.74); <.001
Hispanic	0.81 (0.72–0.91); <.001	0.90 (0.76–1.07); .231
Other[b]	0.73 (0.60–0.89); .002	0.69 (0.52–0.92); .011
Marital status (married)		
Never married	0.96 (0.83–1.11); .585	0.78 (0.63–0.97); .025
Other	1.13 (1.01–1.26); .036	1.08 (0.90–1.28); .406
Household income (< $20,000)		
$20,000 - $39,999	0.97 (0.86–1.10); .635	0.93 (0.77–1.13); .468
≥$40,000	1.02 (0.89–1.16); .785	0.78 (0.65–0.93); .007
Employed (no)	1.15 (1.01–1.31); .035	0.92 (0.80–1.07); .276
Education (< high school)		
High school or equivalent	1.41 (1.20–1.66); <.001	1.23 (1.01–1.51); .045
Some college	1.53 (1.31–1.77); <.001	1.36 (1.10–1.69); .005
≥ Bachelor's degree	1.79 (1.50–2.13); <.001	1.15 (0.89–1.49); .271
Clinical factors		
No. of past-year psychiatric disorders (none)		
1	5.46 (4.87–6.13); <.001	3.58 (3.12–4.11); <.001
≥ 2	9.26 (7.82–10.97); <.001	7.54 (6.00–9.47); <.001
Antisocial personality disorder (no)	1.28 (1.06–1.56); .012	1.97 (1.55–2.49); <.001
Borderline personality disorder (no)	2.48 (2.18–2.82); <.001	3.50 (2.98–4.11); <.001
Schizotypal personality disorder (no)	1.38 (1.15–1.66); .001	1.42 (1.14–1.77); .002
Alcohol use disorder (no)	1.17 (1.05–1.31); .005	1.19 (1.01–1.41); .035
Pain (in the past 4 weeks) (no)	1.50 (1.30–1.73); <.001	1.45 (1.15–1.81); .002
Nonpsychiatric multimorbidities (none)		
1	1.24 (1.10–1.38); <.001	1.55 (1.30–1.85); <.001
2–4	1.41 (1.24–1.60); <.001	1.80 (1.47–2.21); <.001
≥ 5	1.93 (1.62–2.30); <.001	3.00 (2.23–4.03); <.001
Behavioral history		
Religiosity (no)	0.88 (0.78–0.99); .036	0.84 (0.70–1.02); .076
No. of parental adverse events (none)		
1	1.34 (1.21–1.49); <.001	1.73 (1.47–2.03); <.001
≥ 2	1.75 (1.54–2.00); <.001	2.41 (2.05–2.84); <.001
Incarceration (no)	1.05 (0.91–1.20); .497	1.46 (1.20–1.79); <.001
Homelessness (no)	1.32 (1.10–1.59); .004	2.17 (1.78–2.64); <.001

[a]Data are from National Epidemiologic Survey on Alcohol and Related Conditions Wave III.[23,24]
[b]Includes non-Hispanic Asian and other racial/ethnic groups.

ideation. Thus, our findings suggest that having a greater diversity of social roles, and not necessarily perceiving greater social support, may be more protective from STB.

In our study, it is noteworthy that those with low diversity of social networks were most likely to report lifetime STB, despite reporting high perceived social support. This finding is consistent with previous studies, which showed that diversity of social networks is significantly associated with positive health outcomes, but not with perceived quality of social support.[16,22–24] The finding also aligns with previous literature suggesting that buffering effects of perceived quality of social support is contingent upon diverse social network structure.[16,20,25] Another plausible explanation could be that having diverse social roles may foster more social interactions, leading to less mental distress and loneliness, and, in turn, reduce suicidal behaviors.[7] However, given the cross-sectional nature of the data, the association between diversity of social networks and STB may be bidirectional; those with lifetime STB may have been "socially selective" (ie, distressed individuals were less likely to engage in social interactions). Additional research is needed to examine longitudinal associations among these variables.

Results of our study build upon Durkheim's theory of suicide and the protective effects of social integration and religion.[6,7,42] Although Durkheim did not specifically examine the two constructs examined in our study separately, societal integration in his theory was determined by the number of people in a given group or area and the rate of social interactions.[42] Further, our results revealed that greater religiosity was associated with lower risk of suicidal ideation. Lastly, it should be emphasized that these associations persisted after covarying for major psychiatric, substance use, and personality disorders and medical comorbidities, indicating an independent and robust association between social network diversity and STB.

Collectively, our findings suggest that efforts to enhance an individual's number of social roles (eg, group therapy, peer support interventions, psychosocial rehabilitation, supported employment, clubhouse models) may help mitigate risk for STB. Previous research demonstrated that peer-outreach interventions, for example, may help improve depressive symptoms, as well as loneliness.[43,44] The findings also need to be cautiously situated in the emerging global efforts to enhance social connectedness in medical settings. For example, in the UK, there have been recent efforts to promote "social prescribing" in order to improve health outcomes of patients who present to their primary care doctors.[45] Similarly, in the US, the Veterans Health Administration offers a tele-support program, called Compassionate Contact Corps, to veterans who are socially isolated to talk regularly with trained volunteers via phone or video calls.[46] The findings of our study suggest that such novel and scalable interventions to not only help enhance subjective social support but also improve the number and diversity of social roles may have the potential to prevent STB.

There are also research implications from this study. The COVID-19 pandemic has helped spur a growing body of literature examining the relationship of social support with health and well-being.[3,47–49] Our study suggests that diversity of social networks may potentially be more important than perceived quality of social support in mitigating risk for STB. Further research is needed to better understand the bio-psycho-social mechanisms underlying the relationship between social network diversity and perceived strength of social support, and their effects on STB. In addition, research is needed to understand how other sociodemographic variables, such as gender and race/ethnicity, and clinical variables, including psychiatric and medical disorders, moderate the independent relationship between components of social support and STB. As researchers are designing social support interventions to prevent STB in the post–COVID-19 era,[50] it will be important to consider studying all components of social support, especially the diversity of social roles and networks.

There are several limitations in this study. First, the study design is cross-sectional in nature, and thus we cannot draw causal conclusions. Second, while nationally representative, the NESARC-III does not capture some vulnerable segments of the US population (eg, institutionalized individuals and prisoners). Thus, our findings may not be generalizable to those who are institutionalized. Third, there may be confounding roles of subthreshold symptoms or diagnoses of psychiatric and substance use disorders in the associations of social support components with STB.[51,52] Lastly, retrospective, self-report collection of the data raises the possibility of recall bias, which may impact the validity of our findings.

Notwithstanding these limitations, our study suggests that greater diversity of social networks, but not necessarily greater perceived social support, is linked to a lower likelihood of STB. Additional research is needed to replicate and extend these results in a prospective cohort; elucidate mechanisms underlying the interaction between diversity of social networks and perceived strength of social support, and their independent and interactive effects on STB; and evaluate the efficacy of interventions designed to bolster social network size in mitigating risk for adverse mental health outcomes including STB.

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