Published in final edited form as:

J Adolesc Health. 2017 October ; 61(4): 521–526. doi:10.1016/j.jadohealth.2017.04.014.

Risk and Protective Factors in the Lives of Transgender/Gender Non-Conforming Adolescents

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Abstract

Purpose—Research suggests that transgender and gender non-conforming (TGNC) youth may be at greatly increased risk of high-risk health behaviors compared to cisgender youth, but existing studies are limited by convenience samples and small numbers. This study uses a large school-based sample of adolescents to describe the prevalence of TGNC identity, associations with health risk behaviors and protective factors, and differences across birth-assigned sex.

Methods—This study analyzes existing surveillance data provided by 9th and 11th grade students in Minnesota in 2016 (N=81,885). Students who were transgender, genderqueer, genderfluid or unsure about their gender identity (TGNC) were compared to those who were not using chi-square and t-tests. Outcome measures included four high-risk behaviors and experiences and four protective factors.

Results—The prevalence of TGNC identity was 2.7% ($n=2168$) and varied significantly across gender, race/ethnicity and economic indicators. Involvement in all types of risk behaviors and experiences was significantly higher, and reports of four protective factors were significantly lower among TGNC than cisgender youth. For example, almost two-thirds (61.3%) of TGNC youth reported suicidal ideation, which is over three times higher than cisgender youth (20.0%, $X^2=1959.9$, $p<.001$). Among TGNC youth, emotional distress and bullying experience were significantly more common among birth-assigned females than males.

Conclusions—This research presents the first large-scale, population-based evidence of substantial health disparities for TGNC adolescents in the U.S., highlighting numerous multilevel points of intervention through established protective factors. Health care providers are advised to

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Potential Conflicts of Interest: The authors have no conflicts of interest relevant to this article to disclose.

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act as allies by creating a safe space for young people, bolstering protective factors, and supporting their healthy development.

Keywords

transgender; gender identity; health behaviors; protective factors

Introduction

Transgender and gender non-conforming (TGNC) individuals* (those whose experience of their gender doesn't match their birth-assigned sex) have been the focus of considerable public discourse in recent months, with "out" celebrities [1], a popular TV series [2], and contentious policy debates regarding basic human rights and access to opportunities (eg. gender-specific bathrooms, locker rooms and sports teams [3,4]). However, from an epidemiologic perspective, this group is poorly understood, particularly its youth. The first national prevalence estimates of transgender adults in the U.S. were recently published (0.4%–0.6% of the adult population [5–7]). Using estimates from adults, the Williams Institute has estimated a prevalence of 0.7% of transgender youth among 13–17 year olds, but concludes that refined estimates will depend on new survey data with appropriate assessment of gender identity [7]. Smaller U.S. studies have found slightly higher prevalences of TGNC youth: a study of San Francisco middle school students estimated that 1.3% identified as transgender [8]; 1.6% of participants in a study of high school students in Boston identified as transgender [9]. One national study of New Zealand high school students estimated this group as 1.2%, with an additional 2.5% being "not sure" about their gender [10].

Studies, reports, position papers and clinical guidelines regarding TGNC populations predominantly focus on gender-affirming medical interventions (e.g. hormone therapy, gender-related surgery) [11–16] or mental health disparities [17,18]; other psychosocial issues have only rarely been considered [19]. However, TGNC youth also engage in the usual developmental tasks of adolescence, often including risk behaviors and experiences. Health and wellness for all adolescents go far beyond treatment for specific conditions, and reductions in substance use, unsafe sexual practices, suicide involvement and interpersonal violence among youth are national health priorities enumerated in *Healthy People 2020*. Understanding the needs of vulnerable populations with regard to their health risk behaviors and aspects of the social context that can provide support is critical to the development of appropriate prevention activities.

A small body of research suggests that TGNC adolescents face substantial health disparities in comparison to their cisgender peers (i.e. those matching in their birth-assigned sex and gender identity): they are more likely to face violence and bullying, engage in substance use and high-risk sexual behaviors, and struggle with poor mental health [10,18,20–23]. For

*We note that many different terms and phrases are used in reference to this population and by individuals themselves, including gender diverse, gender variant, gender expansive, gender creative, trans/gender non-binary and others. We have chosen transgender/gender non-conforming to succinctly refer to this group, in keeping with recent scientific studies and input from a group of young adult members of this population.

example, in a recent Canadian study, 65% of transgender 14- to 18-year olds seriously considered suicide in the past year, compared with 13% in a general sample of Canadian adolescents [18]. However, a critical shortcoming of TGNC research is the predominant reliance on adult samples recruited through non-representative methods (e.g. convenience samples recruited at Pride events or support organizations) that may yield biased findings. Previous population-based studies of adolescents have yielded small numbers of TGNC participants [8–10], making statistically valid comparisons impossible. In order to ascertain valid and reliable estimates of personal characteristics, involvement in health risk behaviors, internal strengths and external supports, research with large population-based samples of adolescents is imperative.

The present study uses a very large, school-based sample of adolescents to describe this hard-to-reach group. Specifically, we address the following research questions: 1) What is the prevalence of TGNC identity among youth and how does it differ across demographic characteristics? 2) How do health risk behaviors and protective factors in TGNC youth compare to cisgender youth? 3) Among TGNC youth, how do health risk behaviors and protective factors vary by birth-assigned sex?

Methods

Study design and sample

The present study is a secondary analysis of existing data from the Minnesota Student Survey (MSS), an anonymous surveillance program conducted every three years in grades 5, 8, 9, and 11, coordinated by the state Departments of Education, Health, Human Services, and Public Safety. All public school districts are invited to participate, and 85% of districts had at least one eligible grade participate in 2016. Key questions about gender identity were only included on the high school survey (grades 9 and 11), so the current analysis is restricted to these grades. Of all students enrolled in regular public schools in Minnesota in 2016, 71% of 9th graders, and 61% of 11th graders provided data, resulting in a total sample of 81,885 students. Passive parental consent was used, in accordance with relevant laws. In order to improve the validity of self-reported data, approximately 2% of surveys were discarded due to highly inconsistent responses or a response pattern suggesting exaggeration. The University of Minnesota's Institutional Review Board exempted this analysis from review due to use of existing anonymous data.

Instrument and measures

The MSS was originally developed in the 1980s and is revised every cycle with input from experts in public health, education, psychology, youth development and survey methodology to include new items of interest in recent years. In 2016 the initial gender question was revised to measure birth-assigned sex as biological sex (male/female), followed by a new question regarding gender identity: “Do you consider yourself transgender, genderqueer, genderfluid, or unsure about your gender identity?” (yes/no). This two-item approach is based on recommended, validated measures [24,25], with modifications to be appropriate for a population-based adolescent health survey and to include newer terms used by adolescents to reflect a non-binary gender identity [26].

Numerous demographic and personal characteristics were assessed on the MSS. Grade level was self-reported as 9th or 11th. Students indicated all that applied of five race groups. Responses were combined with a separate item regarding Hispanic ethnicity (yes/no) to create a 7-category race/ethnicity variable (Hispanic; non-Hispanic American Indian, Asian, Black, Pacific Islander, White, and multiple race). One item assessed receipt of free/reduced-price lunch at school, and more severe economic hardship was indicated by an affirmative response to either of these two items: stayed in “a shelter, somewhere not intended as a place to live, or someone else’s home because you had no other place to stay” in the past year; or having to “skip meals because your family did not have enough money to buy food” in the past 30 days. School location was coded as in the 7-county Minneapolis/St. Paul metropolitan area vs. other areas of the state.

Four domains of risk behaviors and experiences were examined, including substance use, sexual behavior, emotional distress and bullying victimization. Substance use included past 30-day cigarette smoking, alcohol use, binge drinking and marijuana use. Seven response options were dichotomized into 0 days versus 1 or more days due to highly skewed distributions. Sexual behaviors included being sexually active (“Have you ever had sexual intercourse (‘had sex’)”); number of sexual partners in the past year (dichotomized as 2+ vs. 0 or 1); not using a condom at last sex; not using any birth control method at last sex (response of “no method,” “withdrawal” or “not sure” to the question “what ONE method did you or your partner use to prevent pregnancy?”); and intoxication at last sex (“Did you drink alcohol or use drugs before you had sexual intercourse the LAST time?”). Emotional distress included depression and anhedonia, using the Patient Health Questionnaire-2, with a scale from 1 (not at all) to 4 (nearly every day). Responses to the two items were summed and dichotomized at 3 or more points vs. fewer, as recommended by the developers [27]; self-harm in the past year (“purposely hurt or injure yourself without wanting to die, such as cutting, burning, or bruising yourself on purpose?”) with responses dichotomized as any versus none; and lifetime suicidal ideation and suicide attempts (“Have you ever [seriously considered attempting/actually attempted] suicide?”). Five measures of bullying experience in the past 30 days were included: physical (“pushed, shoved, slapped, hit or kicked you when they weren’t kidding around?” or “threatened to beat you up”), relational (“spread mean rumors or lies about you” or “excluded you from friends, other students or activities”), cyber (“bullied through e-mail, chat rooms, instant messaging, websites or texting”), and prejudice-based harassment (“bullied you for any of the following reasons: your gender [being male, female, transgender, etc.]; your gender expression [your style, dress, or the way you walk or talk]”). For each bullying item, five responses ranged from “never” to “every day” and each item was dichotomized at “once or twice” or more versus “never” [28].

Four protective factors were assessed. For each measure, survey items were averaged to create a scale score, with higher scores indicating greater endorsement. Internal assets were measured using 14 items (e.g. “I express my feelings in proper ways”), and students responded on a 4-point scale ($\alpha=.90$) [29]. Family connectedness included four items regarding ability to talk with mother/father about problems and feeling cared for by parents and other adult relatives, each with five response options ($\alpha=.75$). Teacher-student relationships were measured with six items from the School Engagement Inventory (e.g. “Overall, adults at my school treat students fairly,” each with four response options ranging

from strongly disagree to strongly agree) and one additional item asking how much “teachers/other adults at school care about you” with five response options which were re-scaled to range 1–4 ($\alpha=.87$) [30]. Feeling safe in the community was the average of two items regarding feeling safe going to/from school and feeling safe in one’s neighborhood (four response options ranging from strongly disagree to strongly agree; $r=.62$).

Data analysis

Approximately 1.2% of students ($n=956$) did not indicate their gender identity, leaving an analytic sample of 80,929. Chi-square tests and t -tests were used to compare demographic characteristics, risk behaviors and protective factors 1) across youth who identified as TGNC vs. not, and 2) among TGNC youth who indicated their birth-assigned sex was male vs. female. Analyses conducted with the full sample used an alpha level of .001 (two-sided) due to the very large sample size. Analyses restricted to TGNC youth used the alpha level of .05. All analyses were conducted using SAS version 9.4.

Results

Overall, 2168 students (2.7%) responded that they identified as TGNC; this prevalence was twice as high among birth-assigned females (3.6%) as birth-assigned males (1.7%). As shown in Table 1, the proportion of TGNC students varied across race/ethnicity and economic indicators, with particularly high prevalence among American Indian (5.2%), Hawaiian/Pacific Islander (8.6%), those of multiple races (4.5%), and those experiencing severe economic hardship (6.2%). The prevalence of TGNC youth was not significantly different in metropolitan versus non-metro locations.

Involvement in all types of risk behaviors and experiences was significantly higher among TGNC youth than cisgender youth (Table 2). For example, almost two-thirds (61.3%) of TGNC youth reported suicidal ideation, which is over three times higher than the rate among cisgender youth (20.0%, $X^2=1959.9$, $p<.001$); and almost one-third (31.0%) of TGNC youth reported a suicide attempt (vs. 7.1% of cisgender youth; $X^2=1532.7$, $p<.001$). Conversely, average levels of all four protective factors were significantly lower among TGNC youth than cisgender youth. For example, the mean level of family connectedness among TGNC youth was 3.53, compared to 4.27 among cisgender youth ($t=-35.7$, $p<.001$).

Within the sample of TGNC-identified youth, patterns of risk and protection differed across birth-assigned sex (Table 3). Assigned males had significantly higher rates of binge drinking, marijuana use, several high-risk sexual behaviors, and physical bullying experiences than assigned females, but assigned females reported much higher rates of emotional distress and all other types of bullying experiences. Assigned males had significantly higher mean levels of protective factors than assigned females, except for feeling safe in their community, which was not statistically significant.

Discussion

To our knowledge, this is the first large-scale population-based study of TGNC adolescents in the U.S., providing a description of this group with regard to prevalence, demographic

characteristics, involvement in risk behaviors and presence of protective factors. Recognizing that schools, the medical community and other institutions use prevalence data to establish priorities, allocate resources and make special accommodations, we note that the 2.7% of students with TGNC identity is comparable to youth with autism spectrum disorders (1.5%) [31], food allergies (3.9%) [32] and developmental delays (3.7%) [33].

Findings indicate notable differences in TGNC identity across demographic groups, similar to those found by Crissman and colleagues among adults [5], with greater prevalence of TGNC identity among non-white groups and those of lower economic status. Additionally, we detected greater involvement of TGNC youth in all types of risk behaviors and lower levels of protection compared to cisgender youth. This study highlights disparities in this understudied population and identifies subgroups where the need for support may be particularly high, especially in the domain of emotional well-being. With over 60% of TGNC youth reporting ever considering suicide and almost one in three reporting an attempt, findings should be taken as a call to action for health professionals, school personnel, community organizations, policy makers and families to recognize, support and protect these vulnerable youth.

Importantly, TGNC youth experience protective factors (e.g. family connectedness) in their lives. Although average levels of support in each area were lower than for cisgender students, findings indicate that, even among TGNC youth, most report comfort talking with parents at least some of the time, feeling supported by teachers, and high internal assets sometimes or often, similar to previous research [10]. A substantial body of work demonstrating the power of these protective factors to buffer against poor health outcomes in stressful or oppressive environments, even among vulnerable groups of young people [34–36], suggests many viable avenues for bolstering support of these youth.

Among TGNC youth, important differences emerged across birth-assigned sex, with those assigned female reporting more emotional distress and peer harassment and lower levels of most types of internal and external protection than TGNC-identified youth assigned male. The higher rates of mental health issues for TGNC-youth assigned female are similar to previous research [18] and mirror higher rates of these problems for cisgender females [37], which may suggest a biological component that would be similar across gender identities (in the absence of gender-affirming hormone treatment). More research is needed to deconstruct these associations, taking into consideration biological features, identity as transgender versus non-binary labels (e.g. genderfluid), gender presentation through dress, mannerisms and personal style, and influences of the dominant culture.

The prevalence found here of TGNC identity among adolescents differs slightly from what has been reported previously in recent population-based samples. Shields and colleagues' study used a gender identity measure with response options of male, female, or transgender [8]; the limited language for transgender identity may have contributed to a lower prevalence (1.3%) compared to the greater number of TGNC terms used in the present study. Similarly, Clark and colleagues' measure included a definition of transgender and a variety of synonyms (including culturally specific language), and found 3.7%, including those who were unsure of their gender identity [10]. Future population-based studies should consider

using recommended measures of gender identity that allow for accurate identification of those whose gender identity and assigned sex do not align [24,25]; a separate question or separate response option to identify those who are unsure of or questioning their gender identity would further aid in focusing on TGNC individuals.

Certain findings regarding risk behaviors were also notably different from previous research with adolescents, using non-representative sampling methods. In particular, substance use behaviors were significantly higher in the present sample of TGNC youth compared to cisgender youth, but not as high as has been reported previously. For example, Rowe and colleagues (2015) found that 47% of trans female youth reported smoking cigarettes in the past six months [38], and Reisner and colleagues (2015) found that 29% of TGNC youth reported cigarette smoking in the past year [23]. These percentages are considerably higher than that found in the present study (15.2% current cigarette smoking), and may be due to the recruitment method (i.e. on-line polling panels and referrals vs. school-based surveys), participants' age (16–24 [38] vs. 14–18) or the time-frame of the measure. Although lower than reported elsewhere, these more generalizable estimates of substance use and disparities in contrast to cisgender youth still point to a need for prevention activities that are sensitive to the needs of TGNC youth.

Limitations and strengths

Findings from the present study must be viewed in light of certain limitations. Survey items designed for a general population of youth may not have adequately captured experiences and behaviors pertinent to TGNC youth. In particular, the question about “biological sex” did not reference “sex assigned at birth,” which might be more clearly understood by TGNC participants than cisgender participants. Similarly, general questions about having sex and the sex of sexual partners may exclude sexual activities and TGNC sexual partners that are particularly relevant to this group; likewise the birth control item did not include a response option appropriate to those with sexual partners of the same sex, and may therefore misclassify some who marked “no method” as high-risk with regards to contraceptive use. Second, given the wording of the survey item, we were unable to distinguish between those who were unsure of their gender identity and those who actively identify as TGNC. As with measures of sexual orientation, being “unsure” is ambiguous, perhaps reflecting lack of understanding of the question in addition to a genuine developmental process [39]; however, we note that unsure or questioning youth (with regards to sexual orientation) have similarly elevated rates of high risk behaviors as lesbian, gay and bisexual youth and are often considered together in research. Third, because relatively few schools offer explicit support for TGNC youth (e.g. enumerated anti-bullying policies) [40]; TGNC students are subject to greater harassment and bullying than cisgender students [10,20]; they are therefore more likely to be out of school on any given day, including the day of survey administration. Findings may underestimate the prevalence of TGNC identity and involvement in high-risk behaviors and experiences.

However, this research also includes several strengths. The very large sample size yielded an adequate number of TGNC-identified youth for analysis across numerous personal characteristics and behaviors, which has not been possible in smaller samples. Second,

although data come from a single state, findings have greater generalizability than the overwhelming majority of studies of TGNC individuals, due to the school-based sampling strategy. Finally, the use of both birth-assigned sex and a separate gender identity measure that included varied language captured a diverse group of young people who identify as something other than cisgender, which is an advance over many previous studies with more limited assessment.

Conclusions

This research presents the first large-scale, population-based evidence of substantial health disparities for TGNC adolescents in the U.S. and highlights numerous possible points of intervention through established protective factors at multiple levels. Results also reveal differences in risk and protection between TGNC subgroups, emphasizing both the heterogeneity within this community and the importance of appropriately tailoring prevention and intervention strategies. Health care providers and others who work with and on behalf of youth are advised to recognize the unique needs of this population and act as allies by working to create safe spaces for young people. In addition, families, school personnel and community members can provide crucial protections to buffer challenges and support the healthy development of these youth.

Acknowledgments

Research reported in this publication was supported by the Eunice Kennedy Shriver National Institute of Child Health & Human Development of the National Institutes of Health under Award Number R21HD088757. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. Minnesota Student Survey data were provided by public school students in Minnesota via local public school districts and are managed by the Minnesota Student Survey Interagency Team.

Abbreviations

TGNC	Transgender/Gender Non-Conforming
MSS	Minnesota Student Survey
LGBTQ	lesbian, gay, bisexual, trans and queer/questioning
NH	non-Hispanic

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Implications and Contribution

This research presents a large-scale, population-based evidence of substantial health disparities for TGNC adolescents (compared to cisgender adolescents) and within the TGNC group (birth-assigned females vs. males). Findings highlight numerous multilevel points of intervention through established protective factors.

Table 1

Prevalence of Transgender & Gender Non-Conforming Identity across demographic groups among participants in the Minnesota Student Survey (n=2168)*

TOTAL	n	%
Birth-assigned sex	p<.001	
Male	684	1.7
Female	1457	3.6
Grade	p=.001	
9 th	1271	2.9
11 th	897	2.5
Race/ethnicity	p<.001	
American Indian/Alaskan Native, NH	44	5.2
Asian, NH	181	3.7
Black, African or African American, NH	140	3.0
Native Hawaiian or other Pacific Islander, NH	11	8.6
White, NH	1257	2.2
Multiple, NH	252	4.5
Hispanic or Latino/a	255	3.6
Free/reduced-price lunch	p<.001	
Yes	834	3.8
No	1315	2.3
Economic hardship	p<.001	
Yes	411	6.2
No	1663	2.3
Location	p=.148	
Twin Cities Metro	1188	2.8
Non-metro	980	2.6

* chi-square tests of associations were used for all demographic factors.

NH=non-Hispanic

Table 2
Risk behaviors and protective factors of Minnesota Student Survey participants, by gender identity (N= 80,929)

Transgender & Gender Non-Conforming (n=2168)							Cisgender (n=78,761)		
Risk Behaviors	n	%	N	%	p [*]				
Substance use									
Smoked cigarettes (past 30 days)	297	15.2	4315	5.9	<.001				
Drank alcohol (past 30 days)	458	23.4	12,519	17.1	<.001				
Binge drinking (past 30 days)	219	11.2	6099	8.3	<.001				
Smoked marijuana (past 30 days)	337	17.4	7758	10.6	<.001				
Sexual behaviors									
Ever had sex	572	30.0	15,749	22.0	<.001				
2 partners (past year)	296	15.5	6076	8.5	<.001				
No condom at last sex	289	51.3	5926	38.3	<.001				
No birth control at last sex	224	40.7	3702	25.4	<.001				
Intoxicated at last sex	124	21.8	2257	14.4	<.001				
Emotional distress									
Depressive symptoms (PHQ-2 3)	1155	57.9	15,848	21.3	<.001				
Self-harm (past year)	1076	54.8	10,650	14.4	<.001				
Suicidal ideation (ever)	1202	61.3	14,812	20.0	<.001				
Suicide attempt (ever)	609	31.0	5286	7.1	<.001				
Bullying victimization (past 30 days)									
Physical	526	25.1	9841	12.7	<.001				
Relational	1091	52.2	24,764	32.0	<.001				
Cyber	583	27.6	9519	12.3	<.001				
Prejudice-based re: gender	737	35.3	3658	4.7	<.001				
Prejudice-based re: gender expression	979	46.9	11,658	15.0	<.001				
Protective factors									
	Mean	SD	Mean	SD	p [^]				
Internal assets (range: 1–4)	2.56	0.61	2.97	0.59	<.001				
Family connectedness (range: 1–5)	3.53	0.96	4.27	0.76	<.001				
Student-teacher relationships (range=1–4)	2.80	0.64	3.07	0.58	<.001				

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	Transgender & Gender Non-Conforming (n=2168)		Cisgender (n=78,761)	
Feel safe in community (range=1–4)	3.19	0.66	3.55	0.53
				<.001

* chi-square tests of associations were used for all risk factors.
^ t-tests were used for all protective factors.

Table 3

Risk behaviors and protective factors of Transgender & Gender Non-Conforming participants in the Minnesota Student Survey, stratified by birth-assigned sex (N=2168)

Assigned male (n=684)						Assigned female (n=1457)		
Risk Behaviors	n	%	n	%	p [*]			
Substance use (past 30 days)								
Smoked cigarettes	83	14.6	212	15.6	.611			
Drank alcohol	141	24.6	313	23.0	.456			
Binge drinking	92	16.1	125	9.2	<.001			
Smoked marijuana	114	20.1	219	16.2	.040			
Sexual behaviors								
Ever had sex	187	33.2	378	28.6	.046			
2 partners (past year)	102	18.1	190	14.4	.039			
No condom at last sex	84	45.7	203	54.4	.051			
No birth control at last sex	76	43.2	146	39.7	.436			
Intoxicated at last sex	59	31.7	65	17.2	<.001			
Emotional distress								
Depressive symptoms (3)	246	41.6	896	64.9	<.001			
Self-harm (past year)	224	38.1	845	62.5	<.001			
Suicidal ideation (ever)	241	40.9	944	69.9	<.001			
Suicide attempt (ever)	134	22.9	467	34.4	<.001			
Bullying victimization (past 30 days)								
Physical	188	29.5	332	23.2	.002			
Relational	268	42.3	812	56.7	<.001			
Cyber	153	23.5	424	29.6	.004			
Prejudice-based re: gender	159	25.0	563	39.5	<.001			
Prejudice-based re: gender expression	234	36.8	731	51.2	<.001			
Protective factors								
	Mean	SD	Mean	SD	p [^]			
Internal assets (range: 1-4)	2.67	0.71	2.51	0.56	<.001			
Family connectedness (range: 1-5)	3.68	1.06	3.46	0.90	<.001			

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	Assigned male (n=684)		Assigned female (n=1457)	
Student-teacher relationships (range=1–4)	2.84	0.66	2.69	0.59
Feel safe in community (range=1–4)	3.23	0.73	3.18	0.62
				.129

* chi-square tests of associations were used for all risk factors.
^ t-tests were used for all protective factors.